

STE(A)M EDUCATION CENTER REPLACEMENT PROJECT SHORELINE COMMUNITY COLLEGE

Project Request Report 2019-2021 Washington State Board for Community and Technical Colleges

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Attached Support Files (links are not yet active)

Space Utilization Calculations (see attached excel file.)

C-100 Preferred Option (see attached excel file.) C-100 Alternative (see attached excel file.)



1. EXECUTIVE SUMMARY

1.1 PROBLEM STATEMENT / TYPE OF PROJECT REQUEST

CRITICAL NEEDS

Unprecedented economic and population growth in King and Snohomish Counties is increasing demand for people with both the technical abilities and the workplace skills to fill jobs in STEM-related fields. Employers are looking for workers with a balance of job-specific training and academic proficiencies, as well as the ability to communicate and be creative and collaborate. STE(A)M education is an interdisciplinary approach that brings science, technology, engineering, arts and mathematics together to prepare students for success in the 21st-century workplace. Research demonstrates that students exposed to arts education score higher on academic achievement tests and demonstrate greater social, cultural, emotional and cognitive development.

Health care, which is currently one of the City of Shoreline's three largest industries, provides an example of both needs and opportunities. The Puget Sound Regional Council forecasts that there will be 135,000 new health care jobs in the region by 2040. At the same time, the U.S. Health Resources and Services Administration reports that by 2025 Washington State will have 7,000 unfilled positions for trained nurses. Preparing students to fill these positions requires more nursing skills training. Their education must foster observation, critical thinking, problem solving, communications and teamwork abilities. Courses in math, science and the arts support this broad-based approach.

Shoreline Community College plays a central role in preparing students for high-demand, STEM-related occupations. The college's nursing program is widely recognized for excellence. Its math programs help students meet the prerequisites for all of the college's STEM-related degrees. Music and music technology education programs provide training for jobs in the evolving technology sector and foster the development of soft skills. All of these are critical to enabling students to develop the skills for the 21st-century workplace. However, deficient facilities, lack of access and inadequate learning environments limit enrollment in these programs and constrain the college's ability to provide students with the interdisciplinary education they need to succeed.

Deficient Facilities

Shoreline's campus consists largely of an aging group of small one- and two-story residential scale buildings, with exterior walkways which are set in a maze-like pattern that inhibits wayfinding and ADA access. The nursing program is located in Building 2300, which is 46 years old. General-purpose and math classrooms are located in Building 2200, which is 51 years old. The 2015 Facility Condition Survey (FCS) survey notes that both facilities have significant system deterioration and indicates their life expectancy is less than five years. It states that the buildings should be comprehensively renovated or replaced. The buildings, which have similar

structural systems, lack the ability to resist seismic forces and could collapse in an earthquake.

Music and music technology programs are located in Building 800, which is 40 years old. The 2015 FCS score indicates that it should be replaced. The irregular geometry of spaces results in an indeterminate structure that could collapse in an earthquake. Collapse of the concrete bridge at the main building entry would constrain people from exiting the building. All three buildings have life safety, mechanical and electrical systems that do not meet code and are beyond their service life. IT and power are not adequate to support contemporary equipment or technology. None of the buildings has ever been substantially improved.

Program Access and Space Adjacencies

The math programs are scattered across campus, creating barriers to student success. Separation of classrooms and faculty offices negatively impacts access, instruction and engagement. The music building is in a remote location, visually and physically separate from the main campus, which constrains opportunities for interdisciplinary collaboration.

Inadequate Learning Environments

The existing buildings do not provide learning environments that supports student achievement and retention. There are no spaces for project-based learning or informal student study spaces, which are critical to teaching collaborative skills that students need to succeed in the workplace.

The nursing program basic skills lab is located in an old storage room with no daylight and limited ventilation. It does not have enough beds to accommodate the ideal class size, limiting the college's ability to serve enrollment demand. It is not ADA accessible. There are no nursing simulation labs on campus, which forces students and faculty to travel to hospitals, wasting time and disrupting the educational process. Without a new facility to accommodate nursing program spaces the college will become increasingly challenged to meet the demand for nursing graduates and fulfill the forecasted workforce gaps in the region

Music classes are held in retrofitted spaces with limited daylight and ventilation. The facilities do not have the technology required for instruction in music technology, digital recording, gaming audio and sound engineering.

TYPE OF REQUEST

The STE(A)M Education Center is a replacement project.

1.2 PROPOSED SOLUTION

Shoreline Community College has identified a unique opportunity to bring academic, professional-technical and arts programs together to increase student success, achievement and retention. The STE(A)M Education Center colocates the nursing, math and music programs to create a 49,961 square foot interdisciplinary center that fosters students' ability to think critically, collaborate and be creative. The new building will

enable the college to meet its goal of preparing academic students for baccalaureate education and professional-technical students for high demand occupations.

The center will provide right-sized nursing labs including a simulation lab, consolidate the math program and provide spaces for contemporary music and music technology education. It will contain general purpose classrooms and informal study spaces, configured and equipped for active learning, that will be shared by all disciplines on campus.

The STE(A)M Education Center will be located in an area of campus where it will act as a connecting point between academic science programs and nursing, as well as between music and music technology and visual arts. This location will promote programmatic synergies, including between science and music and in areas of virtual and augmented reality. Visibility of programs from inside and outside the building will make students aware of the career pathways they can pursue. The project will remove barriers to ADA access on the steeply sloped campus.

1.3 PROGRAMS ADDRESSED BY PROJECT

The project provides space for the college's nursing, math. music, and music technology programs. General purpose classrooms will also be scheduled for use by the engineering, anthropology, anatomy and physiology, health informatics & information management, medical lab technician, and phlebotomy programs.

1.4 PROBABLE COST SUMMARY AND COMPARISON TO BENCHMARK

Category	Cost
Construction Contracts	\$22,311,816
Other Costs	\$6,949,184
Total (rounded to \$1,000)	\$29,261,000

Total project cost is less than 100% of the expected cost for the facility type.

1.5 PROJECT SCHEDULE

Phase	Start	Complete
Predesign	Sep-2018	Mar-2019
Design	Jul-2019	Jun-2021
Construction	Jul-2021	Apr-2023

1.6 FUNDING

The project is anticipated to be funded through general obligation bonds allocated through the state's capital budget.

2. PROBLEM STATEMENT, OPPORTUNITY, PROGRAM REQUIREMENT

2.1 DESCRIPTION OF THE PROJECT AND ITS BENEFITS

PROJECT DESCRIPTION

The new, 49,961 square foot STE(A)M Center colocates the nursing, math, music, and music technology programs in an interdisciplinary facility that brings academic, professional-technical and arts programs together. It replaces Buildings 2300, 2200 and 800 which the 2015 Facilities Condition Survey indicates are at the end of their service lives and should be replaced. The new building will contain contemporary classrooms and informal student study spaces that support active, project-based learning, group work and peer-to-peer engagement. The project includes related site work that improves ADA access, stormwater management, emergency access and parking.

BENEFITS

Improved Program Access & Learning Environments

The new building will be located next to the college's Health Sciences and Advanced Manufacturing Building creating an interdisciplinary neighborhood of science, technology, engineering, art and math programs in the center of the campus. Bringing these programs together and making them visible to students improves program access and increases awareness of the career pathways they can pursue. It helps students understand the benefits of lifelong learning.

The facility is planned to provide the academic, technical and soft skills that support student development, allowing them to gain a depth of knowledge in their area of specialization as well as a breadth of understanding in other disciplines that gives them the ability to communicate, create and collaborate. Active learning classrooms will be configured and equipped to accommodate project-based learning. Informal student study spaces will be a magnet that invite students from nursing, math and music as well as the campus-at-large to engage with each other.

Nursing's basic skills lab will be configured and equipped to emulate real-world clinical and hospital environments. Simulation labs will provide students with hands-on training in emergency and urgent care, and allow faculty to observe, test and review student progress. Locating nursing simulation labs on campus eliminates the need to go off campus and connecting the lab experience to the rest of the nursing program.

Consolidating math classrooms, spaces for informal group study activities and faculty offices will improve program delivery and increase instructor effectiveness. Informal spaces for group study will not only be used by student study groups but will also be used by faculty to meet with students who need help understanding math problems

Shared Resources

Active learning classrooms, meeting rooms, breakout spaces, workrooms and student study, and gathering spaces will be shared by all of the programs in the building. The facility is efficient and adaptable to changing program demands.

Partnerships with K-12 and Local Businesses

The project will enhance local partnerships. The nursing program has articulation agreements with the University of Washington for Bachelor of Science in Nursing (BSN) completion, and collaborates with University of Washington Continuing Nursing Education and North Puget Sound Clinical Placement Consortium. In addition, nursing students use the simulation lab at Northwest Hospital, which is part of UW Medicine. Northwest Hospital has identified the nursing program as a significant source of well qualified graduates and has asked the college to consider enhancing its medical education offerings to new programs. The project will promote the enhancement of nursing students' educational experience.

The music program has community relationships with the Shoreline-Lake Forest Park Arts Council, the city of Shoreline, the Shoreline School District, Shoreline Rotary and numerous community businesses, as well as industry relationships with Symetrix, Ron Jones Productions, Skymuse Studios, Opus 4 Studios, Grammy U, The AES, Ars Divina, London Bridge Studios, Summit Audio, Origin Records, Morgan Sound, RFI Mastering, I Am Sound and Video. The project will allow these partnerships to be enhanced through better use of space, as well as promote audio-visual synergies through colocation in a campus neighborhood that includes the existing visual arts center immediately adjacent to the project site.

2.2 FACILITIES MASTER PLAN, INSTITUTIONAL & STRATEGIC PLANS

1. FACILITIES MASTER PLAN

The STE(A)M Center is the next replacement project in the college's Facilities Master Plan. The project addresses the institutional goals articulated in the master plan of building community, increasing accessibility, and fostering sustainable practices. It responds to the master plan's goal of replacing worn and obsolete buildings with new buildings that support the college's current programs particularly in allied health and sciences. Co-locating the nursing, math and music programs into a single facility addresses the critical physical deficiencies and program needs associated with three of its current buildings. The project will improve campus disabled access, provide informal indoor gathering spaces, and contribute to campus sustainability. See <u>page</u> 155 in the Appendix. See project priority list for 10-year capital plan on <u>page 66</u>.

2. STRATEGIC PLAN AND INSTITUTIONAL GOALS

The project aligns the goals and strategies included in Shoreline's Strategic Plan 2016-21. (see <u>page 153</u> in the Appendix).

Shoreline Goals and Strategy

STE(A)M Education Center

GOAL 1

Attract students and community learners and ensure successful attainment of their goals through college programs, services, and teaching and learning environments.

STE(A)M education stimulates selfconfidence, communication skills, cultural awareness and sensitivity increasing academic achievement.

Shoreline Goals and Strategy	STE(A)M Education Center
STRATEGY 1B. Engage in comprehensive strategic enrollment management, encompassing the entire student experience, from the moment students aspire to attend college to the moment they attain their educational goals.	Co-locating programs currently housed in small, separate facilities into a multidisciplinary learning center will make programs and career pathways visible to students, promoting student achievement and retention. Adjacency of music, math and health sciences programs will create opportunities for interdisciplinary learning and innovation.
STRATEGY IC. Create physical spaces and employ technologies that enhance student learning	Informal study and gathering spaces will promote student-to-faculty and peer-to-peer engagement. Learning environments will be configured and equipped for project-based learning to teach students communication and collaboration skills required by employers. Nursing skills labs emulate real-life clinical and hospital environments.
GOAL 2	
Continually strive for disciplined excellence and focused improvement.	The versatile resources in the STE(A)M Education Center will be shared by programs across campus increasing their space use efficiency and agility.
STRATEGY 2A. Engage in an ongoing, data-informed cycle of academic program review that allows for agile changes in program offerings with a focused, creative mindset.	Combining multiple programs in a single building will allow the college to adapt to changing programs and to promote greater collaboration around program development and cross-disciplinary curriculum.
STRATEGY 2D. Invest in high-impact teaching practices for student learning	Active learning classrooms, informal student study spaces, meeting and breakout rooms support high-impact teaching practices and promote innovation.
GOAL 3	
Ensure that a climate of intentional inclusion permeates the College's decisions and practices, which demonstrate principles of ecological integrity, social equity, and economic viability.	The center will increase social equity by removing barriers to ADA and bringing learners from multiple programs together as a community. Interdisciplinary collaboration between students and faculty from music and nursing can open the doors to new economic opportunities.

Shoreline Goals and Strategy	STE(A)M Education Center
STRATEGY 3B. Develop and maintain a framework to ensure that ecological integrity guides our practices.	Designed to meet LEED silver certification requirements, the building will meet the college's long term commitment to environmental stewardship conserving by energy, water and other material resources.

2.3 RELATIONSHIP TO SBCTC SYSTEM DIRECTION GOALS

SBCTC System Direction Goal	STE(A)M Education Center
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PROMOTE	STIIDENT	ACHIEVEMENT	AND SUCCESS
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Improve math achievement	Consolidating math education at Shoreline will provide more consistent, ongoing support for students to succeed in math.
Increase access to wrap-around student services to raise post-secondary attainment for underrepresented, adults, veterans, and first-generation students and increase the percent of basic skills students that move beyond basic skills.	Wrap-around services related to math achievement, as well as ABE-level math instruction, will be part of the consolidated math offerings, which will include consistent, campuswide learning goals related to college success.
Close skill gaps within the workforce to ensure workforce training capacity is sufficient for demand and increase awards in high-demand professional-technical programs.	Trained health care providers, such as nurses and certified nursing assistants, are in high demand in the region; providing expanded, up-to-date facilities for Shoreline's nursing programs will strengthen the college's contribution to meeting workforce demand.

INCREASE ACCESS TO POST-SECONDARY EDUCATION

INCREASE ACCESS TO POST-SECONDARY EDUCATION			
Provide incentives to increase the number of people in Basic Education for Adults programs and programs that combine basic skills, English language, academic, and jobs skills training.	The nursing facilities in the building will allow expansion of the Nursing Assistant Certified program, which is part of the Integrated Basic Education & Skills Training (I-BEST) program.		
Enroll more underrepresented, first-generation and adult students, active military, veterans and their dependents and develop means to attract former students needing credits for degrees, certificates, or credentials.	Completion of college math is a challenging milestone for most community college students, particularly those from groups addressed in this goal. The coherent and comprehensive math support provided in this building will attract students who self-identify as needing additional support in math.		

BUILD ON THE SYSTEM'S STRENGTH AND SUCCESSES

Increase communication and partnerships within the system, including faculty, students and staff, and with business, labor, K-12, four-year institutions and other stakeholders.

Colocating math offerings including ABE-level math, supplemental instruction, and student study areas will allow students to engage in group study around math concepts, creating a learning community with access to faculty. This model will bring significant change for Shoreline's math instruction. Co-location will provide an opportunity for increased communication, partnership, and sharing of best practices as part of state-wide math achievement initiatives.

2.4 PROGRAM AND RELATED SPACE TABLE

Program	Existing	Proposed	Change
CLASSROOMS	21,833	31,095	9,262
Nursing Classrooms, skills lab, medication room, simulation labs, control room, debrief, patient toilet, laundry, supply room	5,191	9,910	4,719
Music and Music Technology Classrooms, rehearsal/ practice rooms, piano lab, recording/ studios, multi-media computer lab, file library, instrument storage, lockers	9,529	11,925	2,396
Math Classrooms, instruction	5,425	5,100	(325)
Classroom Support Group study, breakout rooms, faculty break rooms, student lounge, copy/ work room, conference rooms	1,688	4,160	2,472
FACULTY OFFICES	3,233	3,310	77
Dean/ director's offices, faculty offices, shared adjunct and part time staff workstations	3,233	3,310	77
Assignable Square Feet (ASF)	25,066	34,405	9,339
Support Spaces	22,615	15,556	(7,059)
Subtotal Gross Square Feet	47,681	47,681	0
* Allowance For External Circulation	0	2,280	2,280
Gross Square Feet (GSF)	47,681	49,961	2,280
Efficiency	52.6%	68.9%	16.3%

The replacement projects allows the college to re-purpose existing spaces to serve program needs increasing functionality. The existing facilities have an assignable to gross square foot efficiency of 53%.

The replacement building provides a higher percentage of assignable square feet relative to the total, increasing efficiency to 69%.

2.5 INCREASED TYPE 1 AND TYPE 2 FTES ACCOMMODATED BY THIS PROJECT

Demand for education in the college's service district is growing. The 2016 Capital Allocation Model (CAM) projects that the college's Type 1 FTES will increase by 232 students and that Type 2 FTES will grow to 291 over the next decade. Note: Summer and fall 2017 college-wide enrollment, compared to summer and fall 2016, is up 104 annualized FTEs.

The college has secured state board approval to build on-campus student housing with 225 beds which was not accounted for in the CAM and is anticipated to be an additional stimulus to enrollment growth.

2.6 TABLE OF AFFECTED EXISTING BUILDINGS

UFI	Building	GSF	Year	Exterior Circulation	Total GSF
A05615	MUSIC (800)	23,822	1977	0	23,822
A07428	REGCLA (2200)	6,720	1966	2,280	9,000
A07524	NURSED (2300)	17,589	1971	0	17,589
	Total	47,681		* 2,280	49,961

^{*} See diagram and calculations on page 76 in the Appendix.

3. ANALYSIS OF ALTERNATIVES

3.1 DEFINITION OF CAPITAL PROBLEM

Building	Age (2017)	2015 FCS Score
MUSIC (800)	40	530
REGCLA (2200)	51	438
NURSED (2300)	46	460
Average Weighted Score	46	492

BUILDING 800

Building Age & Condition

Building 800 is 40 years old and is in the worst condition of any building on campus. The Facility Condition Survey (FCS) score is 530 indicating it should be replaced. The FCS states that the building has a life expectancy of 5 to 15 years. See page 143

Functionality

Building 800 was designed to serve the college's music programs. Some adaptations have been made to accommodate contemporary music technology programs such as MIDI Music Production and digital audio engineering but the building does not have the spaces or A/V systems required to meet their needs.

The building was originally built as a one-story, elevated structure. Some years later the space below was enclosed to create a lower level for storage, offices and classrooms. No stairs, elevator or ventilation was provided. There is limited access to daylight. Students, faculty and staff are forced to walk out and around the outside of the building to get from one level to another. The separation of programs keeps students and faculty in silos, limiting engagement and sharing of resources. Although the storage areas are not suitable for occupancy they are currently being used for instruction, rehearsal and offices.

Mechanical, Electrical, Telecom, and Plumbing Systems

The mechanical, plumbing and electrical systems do not meet code, are beyond their useful life and should be replaced. The lower level of the building is not ventilated. Backbone cabling does not have the capacity or bandwidth to adequately transport the voice, data, and video applications required for contemporary instructional programs.

BUILDING 2200

Building Age & Condition

Building 2200 is 51 years old and is in failing condition. The 2015 FCS score is 438. The survey indicates that the building has a life expectancy less than five years and states that it should be renovated or replaced. page 146.

Functionality

The small building contains classrooms which are accessed from an exterior walkway. It is not adaptable to evolving program needs. The original, tiered lecture hall was subsequently divided into two classrooms. The stepped floor remains, restricting table and chair layouts that would accommodate contemporary team-oriented learning. The thin partition between the spaces can be flexed by pushing on it and does not provide any acoustic separation. As a result, these are the least utilized spaces on campus.

Mechanical, Electrical, Telecom, and Plumbing Systems

The mechanical, plumbing and electrical systems do not meet code, are beyond their useful life and should be replaced. The building does not have any restrooms. Backbone cabling does not have the capacity or bandwidth to adequately transport the voice, data, and video applications required for contemporary instructional programs.

BUILDING 2300

Building Age & Condition

Building 2300 is 46 years old and is in failing condition. The 2015 FCS score is 460. The survey indicates that the building has a life expectancy of less than five years and states that it should be renovated or replaced. page 149.

Functionality

The original, tiered lecture hall is under-utilized because it is too large for instruction. The lower level of the building was designed for use as a storage area and does not have access to daylight or ventilation. Although it was not intended to be occupied it was subsequently modified to accommodate the nursing skills lab. The separation of programs keeps students and faculty in silos, limiting engagement and sharing of resources.

Mechanical, Electrical, Telecom, and Plumbing Systems

The mechanical, plumbing and electrical systems do not meet code, are beyond their useful life and should be replaced. Systems in the lower level, which was designed for storage, are totally deficient. Backbone cabling does not have the capacity or bandwidth to adequately transport the voice, data, and video applications required for contemporary instructional programs.

SEISMIC, LIFE SAFETY, ADA ACCESS AND ENERGY CODE ISSUES

Seismic

Buildings 2200, 2300 and 800 are all seismically deficient and could collapse in an earthquake.

Building 2200 and 2300 have the same structural systems and deficiencies. The cantilevered roof is supported by glulam beams that are rotting due to weather exposure and water damage. Roof sheathing is insufficiently connected to the structure. Roof-to-wall connections do not provide adequate transfer of forces expected in a major earthquake. Building walls are under-reinforced by today's code requirements. The floor framing lacks sufficient connection to the foundation walls to transfer lateral loads to the ground. Interior building components such as utility pipes, mechanical equipment and shelving are not anchored to the floor and walls and present a life safety hazard during a seismic event. See the structural report on page 79 in the Appendix.

Building 800 does not have adequate capacity due to discontinuity of horizontal shear walls and an irregular lateral support system between floors. The existing beams, columns and foundation wall are undersized. The main level is accessed via a concrete pedestrian bridge. The lack of a seismic joint between the structures subjects the bridge is to an extreme torsional irregularity in a seismic event. The bridge could fail preventing occupants from exiting the building and posing a threat to life safety. See the structural report on page 79 in the Appendix.

Life Safety

Building 2200 does not have a fire sprinkler system. Building 2300 has fire sprinkler coverage on the upper floor only. Occupied spaces in the lower level are not protected. Building 800's fire sprinkler system is limited and does not adequately protect the building.

Smoke detection and horn/ strobe coverage in all three buildings is very limited. Fire alarm systems do not have code required audible and visual alarms.

The buildings do not have intrusion detection, access control, or video surveillance.

ADA Access

All three buildings have significant access deficiencies. None of them comply with the intent of the American with Disabilities Act (ADA).

Buildings 2300 and 800 are both two-story structures. They do not have elevators to connect the levels. Disabled students, faculty and staff must exit the buildings and take a circuitous route around the perimeter to go between floors. A series of steps on the lower level of Building 2300 restrict access to the nursing lab.

Plumbing fixtures in all three buildings are deficient and do not comply with ADA.

Energy Code Issues

None of the energy related systems in the three buildings (building envelope, HVAC and electrical) has ever been substantially improved. Systems are largely the same as when the buildings were constructed, 40 to 51 years ago. Deficiencies include single pane windows without thermal breaks, inadequate roof and wall insulation, inefficient mechanical systems and lighting systems without daylight or occupancy controls. All of these systems would have to be completely replaced in a renovation to meet the Washington State Energy Code.

3.2 **OBVIOUS AND CRITICAL NEEDS**

NEW SPACE FOR ENROLLMENT DEMAND

No new net space is proposed by this project.

2. REPLACEMENT

Program Mix Changes

There are no program mix changes.

Simplifying Space Relationships

The current programs are served among three buildings across campus. Combining and co-locating programs within a single facility enhances functional adjacencies, promotes efficiencies and reinforces STE(A)M education principles for cross disciplinary learning. Informal student study spaces are shared by all three programs within a single building, bringing students and staff from different departments

together to enhance a sense of learning community. In addition, operating, maintaining and securing a single building is advantageous for facility staff.

3. ACCREDITATION NEEDS

The College anticipates many of the instructional space in Building 800 and the nursing skills lab in Building 2300 proposed to be replaced by this project will be cited as deficient in the next accreditation visit. These classrooms and the skills lab were originally storage areas that have been re-purposed for instructional use but they do not have adequate ventilation and mechanical systems to meet occupancy requirements by code. Additionally the nursing program is not currently supported by on-campus simulation labs. This project proposes to address this deficiency by providing simulation spaces with high tech/ experiential and interactive space to enhance nursing and health science training.

3.3 ALTERNATIVES CONSIDERED

1. PROGRAMMATIC & FACILITY-RELATED

The college considered not consolidating programs into a single facility but rather an alternative of renovating buildings 800, 2200, and 2300. Doing so keeps the Nursing, Math and Music, programs in their current locations with comprehensive renovations of each respective building. New classroom and lab configurations could be expected to accommodate program needs but would be limited in their long-term flexibility due to inherent characteristics of these buildings.

Alternative 01 - Renovation

Inadequate fire/emergency access

The existing building proximities do not meet current fire separation setbacks and emergency access requirements. There is no access for firefighting equipment due to topography and limited clearances between buildings. Buildings 2200 and 2300 do not have required distances between structures with combustible roofs. Renovations will extend the useful life of the buildings but will not address the separation and access requirements.

The small buildings are functionally deficient

The Facility Conditions Survey (FCS) states that the buildings are poorly configured resulting in programs that cannot function in existing space. The FCS recommends each building be renovated or replaced. The size of each of these buildings relative to the programs they must serve as well as the need to consolidate and share resources through collocation makes renovation untenable.

Buildings 2200 and 2300 are too small to be efficiently renovated

The buildings do not accommodate future need or any program growth.

Significant code improvements would be required

The age of the buildings and the scope of the renovation project would trigger coderequired comprehensive improvements for site and building systems. Renovation of buildings would require costly upgrades to meet current ADA and energy code standards.

2. CONSEQUENCES OF DOING NOTHING

There will be significant negative consequences if nothing is done. The aging, decaying buildings do not accommodate the college's current needs and are a liability for the future. Existing facilities do not provide an instructional environment that supports student achievement. Current "bottle-necks" for prerequisite classes is expected to impact retention and enrollment in associated programs will decline. The condition of the existing buildings makes them subject to failure. The college could be faced with the emergency replacement of a facility. The impact on programs and enrollment may be devastating to the college.

3. COST ESTIMATE FOR RENOVATION ALTERNATIVE

Category	Cost
Acquisition	\$0
Consultant Services	\$4,554,773
Construction Contracts	\$19,501,926
Equipment	\$2,264,226
Artwork	\$84,410
Other Costs	\$250,203
Total (rounded to \$1,000)	\$26,656,000

See page 25 for C-100 summary.

Due to the number of deficiencies including seismic, energy, envelope and space configuration in these buildings, renovation costs exceed 91% of the replacement value. The result would be an expensive and highly compromised project.

PROJECT PLANNING OF PREFERRED ALTERNATIVE 4.

HISTORY OF BUILDING AND ORIGINAL FUNDING SOURCE 4.1

The initial development of the Shoreline Community College campus was completed in 1965. Building 2200, which was completed in 1966, and Building 2300, which was completed in 1971 were among the first buildings to be constructed on the campus. Building 800 was completed in 1977. All three buildings were funded by the state capital budget.

4.2 USEFUL LIFE OF PROPOSED FACILITY

The new building is planned and budgeted to be a flexible, durable facility that will serve the college and its changing needs for more than 50 years.

4.3 SUSTAINABILITY

The building is planned and budgeted to maximize building system performance and reduce the total cost of ownership. The building is targeted for LEEDv4 Silver certification, which places significant emphasis on energy efficiency and material selection (see <u>page 33</u> in the Appendix). Eleven of the state's required Best Practices to Reduce Greenhouse Gas Emissions have been identified as achievable for this project (see <u>page 171</u> Appendix).

4.4 IMPACT ON DEFERRED MAINTENANCE AND REPAIR BACKLOG

The age and condition of the three buildings to be replaced indicates that failure of building systems could occur at any time, requiring capital funds to be expended for a temporary solution.

ENVELOPE	
Building 800	 Replace roof flashings to halt water infiltration Seal air infiltration gaps and replace windows Replace entry doors/ hardware
Building 2200	Replace entry doors/hardware
Building 2300	Replace entry doors/hardware
LIFE SAFETY	
Building 800	Replace / upgrade fire alarm system
Building 2200	Replace / upgrade fire alarm system
Building 2300	• Replace / upgrade fire alarm system
STRUCTURAL	
Building 800	Stabilize foundation settlement
MECHANICAL	
Building 800	 Repair / replace leaking pneumatic controls and lines Replace corroded plumbing Provide a new ventilation system to provide proper air quality in the lower level instructional space
Building 2200	Rebalance / repair existing HVAC equipment
Building 2300	 Repair/replace leaking pneumatic controls and lines Replace aging mechanical equipment Replace corroded plumbing Repair clogged drain lines

ELECTRICAL

Building 800	 Upgrade electrical service capacity and branch circuit panels to provide adequate power Increase IT infrastructure capacity
Building 2200	 Upgrade electrical service capacity and branch circuit panels to provide adequate power Increase IT infrastructure capacity Replace / upgrade code-required egress lighting
Building 2300	 Upgrade electrical service capacity and branch circuit panels to provide adequate power Increase IT infrastructure capacity Replace / upgrade code-required egress lighting
HAZMAT	
Building 2300	Remove / replace asbestos tiles on mechanical screen

4.5 **ACQUISITION NEEDS**

The site is on the Shoreline Community College campus. No site acquisition is required.

4.6 MITIGATION AND NEIGHBORHOOD RELATED ISSUES

There are no neighborhood or mitigation issues.

PARKING EXPANSION DIRECTLY RELATED TO THE PROJECT 4.7

The parking spaces required are determined by the Master Development Permit which was approved by the City of Shoreline Hearing Examiner Findings, Conclusions and Decision, dated April 22, 2014. It states: "Shoreline Community College shall provide 1,670 on-campus parking spaces during all phases of the Master Development Plan. At no time shall there be fewer than 1,670 on-campus parking spaces."

Prior to construction of this project, the College will exceed the minimum parking count required by having 1,946 stalls.

With the construction of this project, the parking supply on campus is expected to decrease when a portion of the North Greenwood lot will be needed to accommodate a new stormwater detention facility required per the MDP. The project will require an overall review of the entire campus parking availability as part of the permit submittal, however it is expected that the remaining parking count on campus post-construction will remain above the 1,670 stalls required.

4.8 PERMIT ISSUES, VARIANCES REQUIRED

Zoning for the site is governed by the City of Shoreline Municipal code Chapter 20. The site is currently zoned "Campus SCZ." All development within the campus zones are governed by a Master Development Plan (MDP). The most recent MDP was approved by the City of Shoreline Hearing Examiner April 22, 2014. Under the terms of the MDP no variance is expected for the project.

The construction of this project and demolition of three existing buildings is included in the MDP. The height of the proposed building is not limited by the MDP, but the number of stories allowable is limited to four. Height limitations will be driven by the International Building Code (IBC) height requirements. The location of the building will be interior to the existing campus and away from the single family neighborhoods per the MDP. The MDP requires that the building employ sustainable design practices and adopt LEED or similar rating system.

The 2018 edition of the IBC with Washington State amendments is assumed to regulate the design of this facility.

The following highlights provide a summary of the primary applicable regulations.

- The building is a mixed-occupancy building with non-separated uses. It includes A-3, B, and S-1 occupancies.
- The most restrictive occupancy in the building is A-3. This occupancy allows a maximum building area of 232,500 gsf for Type IIA Construction.
- An automatic sprinkler system will be required for the building.
- The maximum allowable building height is 85 feet and maximum number of stories above grade plane is 4 feet.

4.9 UTILITY AND OTHER INFRASTRUCTURE NEEDS

Campus services including gas, sanitary sewer, domestic water and power serve the project site. Minor improvements and branch connections to main lines will serve the new building. New domestic water connections will be required for the fire sprinkler service. A new fire hydrant is expected to be required at the south end of the building.

4.10 STORM WATER AND OTHER ENVIRONMENTAL ISSUES

Storm runoff from the project area will be collected into an underground pipe system and diverted to an enlarged detention and infiltration pond on the lower campus Greenwood Parking Lot. Water quality treatment facilities will be installed on the project site to treat storm runoff from pollutant-generating impervious areas if these areas exceed the code requirement threshold. The treated water will drain to the underground pipe system that conveys water downhill to the detention and infiltration pond. Enhanced treatment for stormwater quality treatment is required by city code.

Low Impact Design (LID) is required by city code. The LID measures may include bioretention cells or permeable pavement, depending on the final building design and soil conditions. The infiltration pond in the Greenwood Parking Lot will also be a LID element.

4.11 **ROADS AND TRAFFIC SIGNALS**

Off campus roads and traffic signals will not be affected by this project.

4.12 DAHP AND TRIBAL REVIEWS

The project will comply with the Executive Order 05-05. The college and its consultant team met with DAHP representatives on-site in September 2017 to review the project parameters and outline steps for moving forward. The college will work with DAHP to complete a Historic Inventory Report including all buildings on campus, which is anticipated to set guiding principles for design of the project upon funding approval. A memo detailing the meeting with DAHP is included in the Appendix. (see page 31)

4.13 **FALL 2016 UTILIZATION OF CLASSROOMS, LABORATORIES** AND ALL INSTRUCTIONAL AREAS ON CAMPUS

Space utilization yields the following recent data for classrooms and labs. The full data is available in the attached excel file.

Quarter	Program Space	Utilization (hours per week)
Fall Quarter 2016	Classrooms	14.12
	Labs	14.04
	Campus	13.87

4.14 **NEW PROGRAMS, CHANGING MIX OF PROGRAMS**

The programs to be housed in the replacement facility include, nursing, math and music offerings.

4.15 NEW SPACE AND WHAT HAPPENS TO VACATED SPACE

The project provides new space for the college's nursing, math and music programs. The buildings currently housing these will be demolished. Buildings 2200 and 2300 must be demolished prior to construction to make room for the replacement building. Building 800 will continue to house the music program until construction of the replacement building is completed. After the music program moves, Building 800 will be demolished.

4.16 COMPARISON OF EXISTING AND NEW SPACES TO THE CAM

The proposed project is a replacement project. There is no net new area. The project repurposes space among the existing programs to provide more efficient and functional spaces.

4.17 **NEED AND AVAILABILITY OF SURGE SPACE**

No surge space will be needed for the music program since Building 800 can remain while construction occurs. The nursing program including office space, the skills lab and general classrooms along with classrooms for math in Buildings 2200 and 2300 will be temporarily housed in portable units.

4.18 FLEXIBILITY AND ADAPTABILITY OF PROPOSED SPACE

Consolidating instructional space from three buildings into one building provides long-term flexibility as programmatic changes occur over time. Locating classrooms and offices in a three-story structure with a double loaded corridor maximizes flexibility for evolving instructional needs.

The building will be comprised of classrooms, basic skills and simulation labs that are supported by informal study, breakout, team rooms and faculty-to-student interaction spaces. This balance of active instructional space with student-centric individual and group study will be supplied by infrastructure that supports continued growth of technology, online delivery of education and improved workplace readiness. Spaces will be designed for adaptability allowing students to collaborate virtually, in-between classes, spontaneously, and in a scheduled session on team assignments.

5. PROJECT BUDGET ANALYSIS FOR PREFERRED ALTERNATIVE

5.1 PREDICTION OF OVERALL PROJECT COST

PROJECT BUDGET

Category	Cost
Acquisition	\$0
Consultant Services	\$4,175,899
Construction Contracts	\$22,311,816
Equipment	\$2,226,817
Artwork	\$96,579
Other Costs	\$450,332
Total (Rounded to \$1,000)	\$29,261,000

Total project cost is less than 100% of the expected cost for the facility type.

See page 23 for C-100 summary.

EXPECTED COST CALCULATION

Facility Type	Expected \$/SF	GSF	Expected Cost
Classroom Building	\$586	49.961	\$29,272,150
Total		49.961	\$29,272,150

5.2 COMPARISON OF \$/FTE TO SIMILAR SBCTC PROJECTS

PROJECT BUDGET / NET NEW FTES COMPARISON

Current SBCTC Projects	GSF	Project Cost	New FTES	\$/Net New FTES
Edmonds Community College	69,910	\$47,378,000	583	\$81,266
Science Engineering Technology Building	09,910	\$47,378,000	303	\$61,200
Cascadia College	66,100	\$41,147,000	254	\$161,996
Center for Science & Technology	00,100	\$41,147,000	234	\$101,990
Shoreline Community College	49,961	\$29,272,150	334	\$87,641
STE(A)M Education Center	45,901	\$29,272,130	334	\$67,041

The above comparison projects are from the SBCTC 2018 Major Project List. The 2026 FTES are the total net FTE growth of each college in 2026 per state board projections.

5.3 ANTICIPATED ANNUAL IMPACT ON THE COLLEGE'S O&M BUDGET

There is no anticipated impact on the college's operations and maintenance budget. Costs to operate and maintain the new facility are offset by current costs for operating and maintaining the three existing buildings.

JUSTIFICATION FOR DESIRED METHOD OF CONSTRUCTION 5.4

The college evaluated three options for project delivery, general contractor construction manager (GCCM), design-build and design-bid-build. Design-bid-build was selected because it aligns with the college's priorities. It enables the college to involve its stakeholders during the planning, design and construction phases of the project and typically results in the lowest cost at bid.

The state's biennial funding schedule does not take advantage of design-build's schedule efficiency.

The college has successfully delivered major projects of comparable scope and cost with design-bid-build. Responsibility criteria will be included in the contract documents to ensure that a qualified contractor is awarded the project. Adequate design and construction contingencies to manage the project are included in budget.

ATTACHMENTS



PROJECT BUDGET (FORM C-100) - REPLACEMENT

The full C-100 is available in the attached excel file.

State of Washington AGENCY / INSTITUTION PROJECT COST SUMMARY		
Agency	Shoreline Community College	
Project Name STE(A)M Education Center- Replacement		
OFM Project Number		

Contact Information			
Name	Stuart Trippel		
Phone Number	206-546-4672		
Email	strippel@shoreline.edu		

Statistics				
Gross Square Feet	49,961	MACC per Square Foot	\$342	
Usable Square Feet	0	Escalated MACC per Square Foot	\$387	
Space Efficiency	0.0%	A/E Fee Class	В	
Construction Type	College classroom facilit	A/E Fee Percentage	7.38%	
Remodel	No	Projected Life of Asset (Years)	50	
Additional Project Details				
Alternative Public Works Project	No	Art Requirement Applies	Yes	
Inflation Rate	2.80%	Higher Ed Institution	Yes	
			16101 Greenwood	
Sales Tax Rate %	10.00%	Location Used for Tax Rate	Ave N, Shoreline	
			WA 98133	
Contingency Rate	5%			
Base Month	November-17			
Project Administered By	DES			

Schedule				
Predesign Start	September-18	Predesign End	March-19	
Design Start	July-19	Design End	June-21	
Construction Start	July-21	Construction End	April-23	
Construction Duration	21 Months			

Green cells must be filled in by user

Project Cost Estimate			
Total Project	\$26,003,635	Total Project Escalated	\$29,261,443
		Rounded Escalated Total	\$29,261,000

STATE OF WASHINGTON AGENCY / INSTITUTION PROJECT COST SUMMARY		
Agency Shoreline Community College		
Project Name STE(A)M Education Center- Replacement		
OFM Project Number		

OFM Project Number			
Cost Estimate Summary			
	Acc	quisition	
Acquisition Subtotal	\$0	Acquisition Subtotal Escalated	\$0
	•		
	Consult	ant Services	
Predesign Services	\$200,000		
A/E Basic Design Services	\$912,808		
Extra Services	\$1,383,324		
Other Services	\$1,139,602		
Design Services Contingency	\$181,787		
Consultant Services Subtotal	\$3,817,521	Consultant Services Subtotal Escalated	\$4,175,899
	Con	struction	
Construction Contingencies	\$853,601	Construction Contingencies Escalated	\$967,642
Maximum Allowable Construction	4	Maximum Allowable Construction Cost	440.045.005
Cost (MACC)	\$17,072,010	(MACC) Escalated	\$19,315,827
Sales Tax	\$1,792,561	Sales Tax Escalated	\$2,028,347
Construction Subtotal	\$19,718,172	Construction Subtotal Escalated	\$22,311,816
	Equ	uipment	
Equipment	\$1,785,796		
Sales Tax	\$178,580		
Non-Taxable Items	\$0		
Equipment Subtotal	\$1,964,376	Equipment Subtotal Escalated	\$2,226,817
	. , ,	• •	. , ,
	A	rtwork	
Artwork Subtotal	\$96,579	Artwork Subtotal Escalated	\$96,579
	Agency Proje	ect Administration	
Agency Project Administration	do.		
Subtotal	\$0		
DES Additional Services Subtotal	\$0		
Other Project Admin Costs	\$0		
	40		40
Project Administration Subtotal	\$0	Project Administation Subtotal Escalated	\$0
	•		•
	Oth	er Costs	
Other Costs Subtotal	\$406,987	Other Costs Subtotal Escalated	\$450,332

Other Costs Costs			
Other Costs Subtotal	\$406,987	Other Costs Subtotal Escalated	\$450,332

Project Cost Estimate			
Total Project	\$26,003,635	Total Project Escalated	\$29,261,443
		Rounded Escalated Total	\$29,261,000

PROJECT BUDGET (FORM C-100) - ALTERNATIVE (RENOVATION)

The full C-100 is available in the attached excel file.

State of Washington AGENCY / INSTITUTION PROJECT COST SUMMARY		
Agency	Shoreline Community College	
Project Name STE(A)M Education Center- Renovation Alternative		
OFM Project Number		

Contact Information			
Name	Stuart Trippel		
Phone Number	206-546-4672		
Email	strippel@shoreline.edu		

	S	itatistics		
Gross Square Feet	47,681	MACC per Square Foot	\$313	
Usable Square Feet	0	Escalated MACC per Square Foot	\$354	
Space Efficiency	0.0%	A/E Fee Class	В	
Construction Type	College classroom facilit	A/E Fee Percentage	10.53%	
Remodel	Yes	Projected Life of Asset (Years)	50	
Additional Project Details				
Alternative Public Works Project	No	Art Requirement Applies	Yes	
Inflation Rate	2.80%	Higher Ed Institution	Yes	
Sales Tax Rate %	10.00%	Location Used for Tax Rate	16101 Greenwood Ave N, Shoreline WA 98133	
Contingency Rate	5%			
Base Month	November-17			
Project Administered By	DES			

Schedule			
Predesign Start	September-18	Predesign End	March-19
Design Start	July-19	Design End	June-21
Construction Start	July-21	Construction End	April-23
Construction Duration	21 Months		

Green cells must be filled in by user

Project Cost Estimate			
Total Project	\$23,732,804	Total Project Escalated	\$26,655,538
		Rounded Escalated Total	\$26,656,000

State of Washington AGENCY / INSTITUTION PROJECT COST SUMMARY		
Agency	Shoreline Community College	
Project Name	STE(A)M Education Center- Renovation Alternative	
OFM Project Number		

Cost Estimate Summary

Cost Estimate Summary			
	Acq	uisition	
Acquisition Subtotal	\$0	Acquisition Subtotal Escalated	\$0
· · · · · · · · · · · · · · · · · · ·		•	
	Consult	ant Services	
Predesign Services	\$200,000		
A/E Basic Design Services	\$1,140,148		
Extra Services	\$1,383,324		
Other Services	\$1,241,741		
Design Services Contingency	\$198,261		
Consultant Services Subtotal	\$4,163,474	Consultant Services Subtotal Escalated	\$4,554,773
	Cons	struction	
	Cons	diuction	
Construction Contingencies	\$747,248	Construction Contingencies Escalated	\$847,081
Maximum Allowable Construction	444.044.056	Maximum Allowable Construction Cost	446,004,049
Cost (MACC)	\$14,944,956	(MACC) Escalated	\$16,881,942
Sales Tax	\$1,569,220	Sales Tax Escalated	\$1,772,903
Construction Subtotal	\$17,261,424	Construction Subtotal Escalated	\$19,501,926
		ipment	
Equipment	\$1,815,796		
Sales Tax	\$181,580		
Non-Taxable Items	\$0		
Equipment Subtotal	\$1,997,376	Equipment Subtotal Escalated	\$2,264,226
	۸۰۰	twork	
Artwork Subtotal	\$84,410	Artwork Subtotal Escalated	\$84,410
Artwork Subtotal	304,410	Ai twork Subtotal Estalated	364,410
	Agency Proje	ct Administration	
Agency Project Administration			
Subtotal	\$0		
DES Additional Services Subtotal	\$0		
Other Project Admin Costs	\$0		
Project Administration Subtotal	\$0	Project Administation Subtotal Escalated	\$0
	70		١
	Oth	er Costs	
Other Costs Subtotal	\$226,121	Other Costs Subtotal Escalated	\$250,203
other costs subtotal	7220,121	Care Costs Subtotal Estalated	7230,203
	Project Co	nst Estimate	

Project Cost Estimate			
Total Project	\$23,732,804	Total Project Escalated	\$26,655,538
		Rounded Escalated Total	\$26,656,000

PROJECT PARAMETERS FORM

Type of Space	Square	Footage	Percent
Renovation of Existing	(S1)	0	
New Space	(S2)	49,961	
Exterior Circulation of Existing. See Appendix H.	(S6)	2,280	
Demolished Area	(S3)	47,661	
Total Affected Area	(S4)	49,961	100%
Net Area Change = New – Demo – Circulation	S5	0	

Costs	Dollars	Percent
Acquisition	\$0	0%
Consultant Services	\$4,175,899	14.27%
Construction Contracts (w/o eligible Infrastructure)	Ca \$22,311,816	76.25%
Eligible Infrastructure Contracts (from C100)	Cb N/A	0%
Equipment	\$2,226,817	7.61%
Artwork	\$96,579	.33%
Other Costs	\$450,332	1.54%
Project Management	\$0	0%
Total Project Cost (C1)	\$29,261,000	100%

Funding	Dollars	Percent
State Appropriation	\$29,261,000	100%
Financed – backed by State Appropriation	N/A	
Local Funds – Cash (see list of qualifying funds)	N/A	
Financed – backed by Local Funds	N/A	
Total Project Funding	(F1) \$29,261,000	100%
Matching		
Variance = Cost – Funding		

Project Weighting	Equivalent Area	Percent
Matching	x	
Infrastructure	X	
Renovation	X	
Replacement	49,961	100%
New	X	
Total	S4 49,961	100%



MINIMUM & OVERARCHING CRITERIA

2019-21 Minimum and Overarching Criteria Points

Evaluation Criteria	Scoring Standard		
College Response	Affected buildings are at a single site.	Yes / No	
College Response	Project does not include improvements to Yes / No		
	temporary or portable facilities.		
College Response	Project is not a gymnasium or recreational	Yes / No	
	facility.		
College Response	Project is not an exclusive enterprise function	Yes / No	
	such as a bookstore, dormitory or contract food		
	service.		
College Response	Project is not dependent on another project in	Yes / No	
	the current request.		
College Response	Project meets LEED Silver Standard	Yes / No	
	requirements.		
College Response	College has a Greenhouse Gas Emission	Yes / No	
	Reduction plan.		
College Response	The facility is state-owned or a condominium	Yes / No	
	interest is held (state capital funds cannot be		
	spent on leased space).		
College Response	Project will take more than one biennium. And,	Yes / No	
	project costs at least \$5,000,000 and does not		
	exceed 70,000 gsf without WACTC Capital		
C II D	Budget Committee approval.	(3)	
College Response	If project includes renovation or replacement,	Yes / No	
	then affected buildings have been owned by the		
C 11	college for 20 years at the time of the request.	N. A. I.	
College Response	If project includes renovation, then the project	Yes / No	
	extends the useful life of the affected building at		
College Response	least 20 years. If project includes renovation, then the cost does	Yes / No N/A	
Conege Response	not exceed 80% of the current replacement cost.	Yes / No N/A	
Effective use of existing facilities	Fall 2016 space utilization relative to standards		
Effective use of existing facilities	and other proposals. Standards are:	Up to 9 points	
See Appendix C for guidelines on	Classroom seats used 22 hours per week.	op to 5 points	
determining existing utilization.	Laboratory seats used 16 hours per week.		
Ability to enhance state and	Add up points from each category: (Max 14)		
institution's achievement of goals	Directly tied to facilities master plan	4	
institution's achievement of goals	Directly tied to objectives in strategic plan	4	
	Include clear and succinct description of the	4	
	relationship between the project and its impact		
	on partnerships with K-12, 4 yrs, business, etc.		
	This may be supported by letters from partners		
	describing how the project will benefit the		
	partnership.		
	Project includes at least seven of the best	2	
	practices identified in Appendix A to reduce		
	greenhouse gas emissions.		
	Overarching Subtotal (O1)		
Overarching Weighting (O2)			
Overarching Weighted Subtotal (O3 = O1 x O2)			
	Overarching Portion of Project (O4)		
	Overarching Points (O5 = O3 x O4)		
	O . C	1	



DAHP APPLICATION MATERIAL



December 18, 2017

Mr. Nicholas Vann
Department of Archaeology and Historic Preservation
PO Box 48343
Olympia, WA 98504-8343

Dear Mr. Vann,

Please find below the summary of the meeting held on September 7, 2017 at Shoreline Community College. This summary and agreement for future action fulfills the SBCTC's PRR requirements for Phase II and the DAHP's review toward submitting the initial funding request.

On September 7, 2017, Shoreline Community College hosted a meeting that also included the Department of Archaeology and Historic Preservation, the Department of Enterprise Services, and Schacht Aslani Architects. Those in attendance included:

Nicholas Vann State Historical Architect (DAHP)
Russell Holter Project Compliance Reviewer (DAHP)
Eric Aman Principal (Schacht Aslani Architects)

Jonathan Martin Project Manager (DES)

Stuart Trippel Senior Executive Director and CFO (Shoreline)

Jason Francois Director of Facilities and Capital Projects (Shoreline)

The intent of this meeting was to update DAHP representatives by discussing the status of upcoming capital projects on campus that support the institutional master plan and evolving program needs. The discussion focused on the following projects as they relate to DAHP purview:

Phase I- Health Sciences and Advanced Manufacturing Classroom Complex (HSAMCC) encompasses two buildings totaling 70,000 square feet, replacing five existing buildings (2400, 2500, 2600, 2700 and 2800). Preliminary communication with DAHP on this project occurred in 2014 during the initial project funding request and again in the winter of 2017 during predesign. As part of the communication during predesign, DAHP requested an updated site visit to understand the project prior to commencing schematic design with the intent of establishing a Memorandum of Understanding (MOU) that defines terms for development to mitigate adverse impact to the character and content of the SCC campus.

Phase II- Nursing, Math and Music Classroom Building will be a single 50,000 square foot building constructed to the west of Phase I and acting in support of the health science, technology, engineering, arts and math (STEAM) district on campus. Phase II construction replaces three existing campus buildings (800, 2200 and 2300). Phase II is currently in the project funding request (PRR) phase. The PRR will be submitted to SBCTC in December 2017.

Both Phase I and Phase II are necessary steps in the College's master plan to allow the College to provide contemporary services. The mission-based focus is to deliver STEAM-related programs with modern lab and classroom facilities. Due to aging physical conditions, limited size, and cost to renovate existing college buildings, Phase I and Phase II became identified as replacement projects under State funding guidelines. DAHP and Shoreline have a shared interest in respecting characteristics of the historic buildings and their surrounding landscape while simultaneously recognizing the need for the college to build contemporary buildings that serve evolving needs.

During this meeting and campus site walk, Shoreline and DAHP agreed to the following steps to coordinate and communicate as project development progresses:

- Summarize the September 7, 2017 visit and discussion with a letter from the College. By documenting this discussion and agreement for future action, this fulfills SBCTC's PRR requirements for Phase II and DAHP's review toward submitting the initial funding request. This letter is that summary.
- As design funding becomes available for Phase I through an approved State Capital Budget (anticipated early 2018), Shoreline will work with DAHP to complete a Historic Inventory Report (HIR) that documents the campus history and existing campus conditions, identifying significant character and content. A third party historic preservationist consultant will complete the HIR. Our meeting referenced how Highline Community College engaged Artifacts Consulting from Tacoma, Washington in a similar fashion for their upcoming and future developments. Artifacts Consulting was also been used to analyze historic content on the State Capitol Campus.
- Once complete, the Historic Inventory Report will guide recommendations and additional discussion between DAHP and Shoreline towards establishing guidelines for future development. This will be formalized in a future Memorandum of Understanding.
- Complete and sign a Memorandum of Understanding that supports future development at Shoreline Community College.

incerely.

Stuart Trippel, Senior Executive Director and CFO

CC:

Jonathan Martin

Eric Aman

Department of Enterprise Services

Schacht Aslani Architects

LEED CHECKLIST



LEED v4 for BD+C: New Construction and Major Renovation Project Checklist

Project Name: Shoreline Community College Nursing, Math and Music Building Date: November 2017

16 Creati LEED for Neighborhood Development Location 1 Creati Sensitive Land Protection 2 Creati Sensitive Land Protection 3 Creati Sensitive Land Protection 4 Creati Surrounding Density and Diverse Usess 5 Creati Surrounding Density and Diverse Usess 6 Creati Surrounding Density and Diverse Usess 7 Creati Reduced Parking Footprint 8 Creati Site Assessment 9 1 Creati Site Development - Protect or Restore Habitat 1 Creati Site Assessment 1 Creati Site Assessment 2 Creati Site Assessment 3 Creati Light Pollution Reduction 4 Creati Light Pollution Reduction 5 Creati Light Pollution Reduction 6 Creati Water Material Commissioning and Verification 7 Ferrera Outdoor Water Use Reduction 8 Creati Water Metering 9 7 77 Energy and Atmosphere 9 7 77 Energy Performance 9 7 77 Energy and Atmosphere 9 7 77 Energy Performance 9 7 77 Energy and Atmosphere 9 7 77 Energy Performance 9 7 70 Frence Endanced Commissioning 9 7 70 Frence Endanced Energy Performance 9 7 70	2			Materials and Resources	2
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1 Credit Credit 1 Credit	5		2 Credit	Building Product Disclosure and Optimization - Environmental Product	2
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1 Credit Credit 1 Credit Credi	-			Building Product Disclosure and Optimization - Material Ingredients	2
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1 O Water	2	~	Credit	Thermal Comfort	-
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Prereq P	1	~	Credit	Quality Views	-
Prereq Prereq	Required	~	Credit	Acoustic Performance	-
Prereq Credit	Required				
Credit C	Required	7	3 Inno	Innovation	9
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1 Credit	9	-	Credit	LEED Accredited Professional	-
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7 17 Energy	~	2 0	2 Regi	Regional Priority	4
7 17 Energy		-	Credit	Regional Priority: Specific Credit	-
Prereq P	33	-	Credit	Regional Priority: Specific Credit	-
Prereq Pr	Required		1 Credit	Regional Priority: Specific Credit	-
Prereq Preseq Pr	Required		1 Credit	Regional Priority: Specific Credit	-
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Credit 1 3 2 Credit 1 1 3 2 Credit 1 Cr	9		Certif	Certified: 40 to 49 points, Silver: 50 to 59 points, Gold: 60 to 79 points, Platinum: 80 to 110	to 110
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	2				

CONSTRUCTION COST ESTIMATE

Shoreline Community College	ON C&	N Consultants, Inc.
Health Sciences, Music and Math Building		leaction Cost Consultants
Shoreline, WA	Date:	December 15, 2017
PRR Estimate	Prepared By:	AC
OVERALL SUMMARY CONSTRUCTION COST		

	Gross Area	\$/SF	\$
Building - New	49,961 SF	303.63	15,169,605
Demolition and Abatement	47,672 SF	11.26	536,911
Sitework			1,365,494
TOTAL CONSTRUCTION COST			17,072,010
Building - Renovation	47,672 SF	267.31	12,743,432
Sitework			2,201,524
TOTAL CONSTRUCTION COST			14,944,956

Note: Washington State Sales Tax is assumed to be included in Soft Costs.

C & N Consultants, Inc. Shoreline Community College Health Sciences, Music and Math Building Shoreline, WA Date: December 15, 2017 PRR Estimate Prepared By: New Building **BUILDING DATA**

Building Area	
Level 0	4,169 SF
Level 1	15,241 SF
Level 2	16,183 SF
Level 3	14,368 SF

Total Gross Floor Area 49,961 SF

Unoccupied Space / Mechanical - Excluded

from GFA 3,025 SF

		Quantity	Unit	Ratio to Gross Area
Number of stories (x1,000)		4	EA	0.080
Gross Area		49,961	SF	1.000
Footprint Area		15,241	SF	0.305
Volume		791,730	CF	15.847
Gross Wall Area		37,187	SF	0.744
Retaining Wall Area		3,617	SF	0.072
Finished Wall Area		33,570	SF	0.672
Windows or Glazing Area	36.00%	13,387	SF	0.268
Roof Area - Flat		16,533	SF	0.331
Roof Area - Sloping		-	SF	
Roof Area - Total		16,533	SF	0.331
Roof Glazing Area		650	SF	0.013
Interior Partition Length		4,785	LF	0.096
Interior Doors Per Leaf		125	EA	0.003
Interior Glazing		2,400	SF	0.048
Finished Area		49,961	SF	1.000
Elevators (x10,000)		1	EA	0.020

	e Community College ciences, Music and Math Building				C& N Consult	
Shorelin	_			Gross Floor Area:	49,961 SF	
PRR Est	imate			Date: D	ecember 15, 2017	
New Bui	lding	Summary of Estimate)	Prepared By:	AC	
No.	Element Description	Ele	ment Totals	Group Totals	Cost Per SF	
A10	FOUNDATIONS			463,172		9.27
A1010	Standard Foundation		104,416		2.09	
A1020	Special Foundation		263,500		5.27	
A1030	Slab on grade		95,256		1.91	
A20	BASEMENT WALL CONSTRUCTION			290,555		5.82
A2010	Basement Excavation		67,167		1.34	
A2020	Basement Wall Construction		223,387		4.47	
B10	SUPERSTRUCTURE			1,972,990		39.49
B1010	Floor Construction		1,551,894		31.06	
B1020	Roof Construction		421,096		8.43	
B20	EXTERIOR ENCLOSURE			2,354,967		47.14
B2010	Exterior Walls		1,126,770		22.55	
B2020	Exterior Windows		1,184,778		23.71	
B2030	Exterior Doors		43,419		0.87	
B30	ROOFING			388,078		7.77
B3010	Roof Covering		388,078		7.77	
C10	INTERIOR CONSTRUCTION			1,576,706		31.56
C1010	Partitions		1,096,823		21.95	
C1020	Interior Doors		264,500		5.29	
C1030	Fittings		215,383		4.31	
C20	STAIRS			135,000		2.70
C2010	Stair Construction		135,000		2.70	
C30	INTERIOR FINISHES			796,216		15.94
C3010	Wall Finishes		224,108		4.49	
C3020	Floor Finishes		259,402		5.19	
C3030	Ceiling Finishes		312,706		6.26	
D10	CONVEYING			115,000		2.30
D1010	Elevators & Lifts		115,000		2.30	
D20	PLUMBING			549,571		11.00
D2010	Plumbing		549,571		11.00	

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	e Community College ciences, Music and Math Building				Gross Floor Area:	C & N Consultants, Inc. Construction Cost Consultants 49,961 SF
PRR Est						December 15, 2017
New Bui	lding	Summ	ary of Est	imate	Prepared By:	AC
No.	Element Description			Element Totals	Group Totals	Cost Per SF
D30	HVAC				2,023,421	40.50
D3010	HVAC			2,023,421		40.50
D40	FIRE PROTECTION				219,828	4.40
D4010	Sprinkler System			219,828		4.40
D50	ELECTRICAL				1,948,479	39.00
D5000	Electrical			1,948,479		39.00
E10	EQUIPMENT				96,000	1.92
E1010	Equipment			96,000		1.92
E20	FURNISHINGS				203,875	4.08
E2010	Fixed Furnishings			203,875		4.08
F10	SPECIAL CONSTRUCTION				-	-
F1010	Special Structure					
F1020	Special Construction					
F20	SELECTIVE BUILDING DEMOLITION				-	
F2010	Building Demolition					-
		Sub-Total			13,133,857	262.88
	General Conditions / General Requirements		10.00%		1,313,386	26.29
		Sub-Total			14,447,243	289.17
	GC Fee		5.00%		722,362	14.46
	November 2017 Construction Cost		ŀ		15,169,605	303.63
	Escalation, excluded (Included in C100 Forms	s)				-
	TOTAL CONSTRUCTION COST				\$15,169,605	303.63

Healt Shor PRR	reline Community College th Sciences, Music and Math Building reline, WA Estimate Building	MATE	Gr	oss Floor Area: Date: Prepared By:	49,961 SF December 15, 2017 AC
	Item Description	Quantity	Unit	Unit Cost	Totals
A10	FOUNDATIONS A1010 <u>Standard Foundation</u>				
	A1011 Wall foundations Reinforced concrete continuous footings and spread footings	88	CY	725.00	63,800
	Miscellaneous Elevator pits including slabs, walls and waterproofing Sump pit including metal grating Perimeter drain pipe and rock Rigid insulation at slab perimeter	2 1 598 598	EA EA LF LF	11,150.00 2,050.00 22.00 5.20	2,050 13,156
	Total For	Standard Foundations			104,416
	A1020 Special Foundation				
	A1021 Pile foundations				
	A1021 Pile foundations Pile foundations, assumed not required				N/A
	A1022 Grade beams Reinforced concrete brace frame footings	340	CY	775.00	263,500
	Total Fo	or Special Foundations			263,500
	A1030 Slab on Grade				
	A1031 Standard slab on grade Reinforced concrete slab on grade	15,241	SF	6.25	95,256
	т	otal For Slab on Grade			95,256
A20	BASEMENT CONSTRUCTION A2010 Basement Excavation				
	A2011 Excavation for basements Excavate for basement Disposal off excavated material off-site	1,544 1,544	CY CY	18.00 21.00	,
	A2012 Structure backfill and compaction Backfill and compaction	193	CY	36.00	6,948
	A2013 Shoring Shoring, assumed not required				N/A
	Total Fo	r Basement Excavation			67,167
	A2010 Basement Walls				

a						174
Shoreline Community College			_		C& N Consultan	neal course
Health Sciences, Music and Math Building			Gro	ss Floor Area:	49,961	SF
Shoreline, WA				Date:	December 15, 2017	
PRR Estimate				Prepared By:	AC	
New Building						
	DETAIL OF ESTIMATE	1		1	1	
Item Description		Quantity	Unit	Unit Cost	Totals	
A 2020 Basement Walls						
Reinforced concrete walls						
Formwork		7,234	SF	12.50	,	
Reinforcing steel		28,698	LB	1.25	,	
Concrete		147	CY	260.00	38,313	
A2022 Moisture protection						
Waterprofing system		3,617	SF	8.00	28,936	
A2023 Basement wall insulation						
Rigid insulation		3,617	SF	3.75	13,564	
A2024 Interior skin						
Gypsum board, painted		3,617	SF	4.50	16,277	
	Total For Base	ment Walls			223,387	-
B1010 Floor Construction						
B1012 Upper floors construction						
Steel columns, allow 1.05#/SF		36,456	LB	2.40	,	
Steel beams, allow 9#/SF		312,480	LB	2.40	,	
Metal deck Reinforced concrete topping slab		34,720 34,720	SF SF	3.90 7.00	,	
Remidiced concrete topping stab		34,720	SF	7.00	243,040	
Brace frames		440.000	LD	0.40	220,000	
Steel columns, beams and bracing		140,000	LB	2.40	336,000	
	Total For Floor Co	onstruction			1,551,894	
B1020 Roof Construction						
B 1020 Roof Construction						
Steel columns, allow 1.05#/SF		17,360	LB	2.40	41,663	
Steel beams, allow 8#/SF		132,264	LB	2.40	317,434	
Metal deck		16,533	SF	3.75	61,999	
	Total For Roof Co	onstruction			421,096	<u>.</u>
B20 EXTERIOR CLOSURE						
B2010 Exterior Walls						
B2011 Exterior wall construction						
Cladding systems		20,183	SF	26.00		
Metal stud framing		20,183	SF	7.00		
Batt insulation, R19		20,183	SF	1.25		
Rigid insulation		20,183	SF	3.25		
Gypsum sheathing, 5/8" thick		20,183	SF	3.00	60,549	

Shoreline Community College & N Consultants, Inc. ON Health Sciences, Music and Math Building Gross Floor Area: 49,961 SF Shoreline, WA Date: December 15, 2017 PRR Estimate Prepared By: AC New Building **DETAIL OF ESTIMATE** Unit Cost Quantity Unit Item Description Totals Air / Vapor barrier, building paper and wrap 20.183 SF 4.20 84.769 Gypsum board, 5/8" at interior finish side 20,183 SF 2.80 56,512 B2013 Exterior louvers, screens and fencing Louvers and sun control devices 1 LS 35,000.00 35,000 B2016 Exterior soffits Exterior gypsum soffits including WAB and metal framing 942 SF 20.00 18,840 Caulking, sealants and firestopping Caulking, sealants and firestopping LS 54,957.10 54,957 1 Miscellaneous Finish to backside of parapet walls 1,276 SF 12.50 15,950 Sheet metal coping 638 LF 35.00 22,330 105.00 Canopies 200 SF 21,000 **Total For Exterior Walls** 1,126,770 **B2020 Exterior Windows** B2021 Windows / Storefronts Windows / Storefronts 9,371 SF 75.00 702,834 Curtain wall Curtain wall glazing system 4.016 SF 120.00 481.944 **Total For Exterior Windows** 1,184,778 **B2030 Exterior Doors** B 2030 Exterior Doors, frames and hardware 6,200.00 Glazed aluminum entrance doors, double 4 EΑ 24,800 HM / Solid core wood door and HM frame, per leaf 5 EΑ 2,225.00 11,125 Specialty hardware 7,494.15 7,494 1 LS **Total For Exterior Doors** 43,419 B30 ROOFING **B3010 Roof Covering** B3011 Roof finishes Roofing system with 1/2" cover board, R30 Rigid insulation, vapor retarder and gypsum base board, 1/2" thick 16.50 272,795 16,533 SF B3012 Traffic toppings and paving membranes 1,653 SF 14,053 TPO walkway 8.50 B3014 Flashings and trim Sheet metal flashings LS 24,980.50 24,981 1

Shoreline Community College Health Sciences, Music and Math Building Shoreline, WA PRR Estimate New Building		Gro	oss Floor Area: Date: Prepared By:	49,961 SF December 15, 2017
DETAIL OF ESTIMA	ATE		1	
Item Description	Quantity	Unit	Unit Cost	Totals
B3021 Glazed roof openings Skylights	650	SF	75.00	48,750
Miscellaneous Rough carpentry Fall anchors including cable	1	LS LS	12,500.00 15,000.00	,
	Total For Roofing			388,078
C10 INTERIOR CONSTRUCTION C1010 Partitions				
C1011 Fixed partitions Metal studs Batt insulation Gypsum board, 5/8" Gypsum board underlayment / multiple layers Sound absorptive panels	66,990 66,990 133,980 48,500	SF SF SF SF LS	4.55 1.00 2.80 2.60 30,000.00	66,990 375,144 126,100
C1013 Operable and folding panel partitions Operable partitions, not required C1016 Interior balustrades and screens				
Guardrails, decorative at open to below C1017 Interior windows and storefronts Interior glazing including transoms and sidelights	40 2,400	LF SF	295.00 67.50	,
Miscellaneous Bulkheads and soffits Blocking and backing	1	LS LS	12,490.25 7,494.15	,
Total F	or Interior Partitions			1,096,823

noreline Community College ealth Sciences, Music and Math Building noreline, WA RR Estimate ew Building		Gr	oss Floor Area: Date: Prepared By:	49,961 December 15, 2017 AC
DETAIL OF ESTIMAT	E			
Item Description	Quantity	Unit	Unit Cost	Totals
C1020 Interior Doors				
C1021 Interior doors Interior doors, frames and hardware Solid core wood / wood glazed doors and HM frame Per leaf	125	EA	2,020.00	252,500
Specialty hardware / rated doors / power actuators / acoustics	1	LS	12,000.00	12,000
Total	For Interior Doors			264,500
C1030 Specialties				
C1032 Fabricated compartments and cubicles Toilet partitions				
ADA toilet partition	6	EA	1,610.00	-,
STD toilet partition Urinal screens	12 6	EA EA	1,415.00 555.00	,
C1033 Storage shelving and lockers				
Janitors mop rack and shelving	4	EA	450.00	1,800
C1035 Identifying devices				
Code signage	49,961	SF	0.16	,
Wayfinding and room identification signage Exterior building signage	49,961 1	SF LS	0.38 8,000.00	-,
Exterior building signage	1	Lo	0,000.00	6,000
C1037 General fittings and misc. metals	10.001	LD	2.05	04.046
Miscellaneous metals, allow 0.4#/SF	19,984 2	LB EA	3.25 800.00	,
Elevator pit ladders	12	EA	230.00	,
Fire extinguisher cabinets Corner guards	49,961	SF	0.16	, -
Grab bars at restrooms	45,561	EA	240.00	
Mirrors at restrooms	6	EA	165.00	,
Restroom accessories	1	LS	14,000.00	14,000
Fixed markerboards and whiteboards	1	LS	54,957.10	
Total For Fittings a	nd Specialty Items			215,383
STAIRS C2010 <u>Stair Construction</u>				
C 2010 Stair Construction including railings and finish				
Stairs	6	FLT	22,500.00	135,000

Total For Stair Construction

135,000

	eline Community College				C & N Consulta	oned cons
	h Sciences, Music and Math Building			Gross Floor Area:	49,961	I SF
	eline, WA			Date:	December 15, 2017	,
PRR	Estimate			Prepared By:	AC	
New	Building					
	DETAIL OF	FESTIMATE	_		•	
	Item Description	Quantity	Ur	nit Unit Cost	Totals	
C30	INTERIOR FINISHES C3010 Wall Finishes					
	C3011 Wall finishes to inside exterior walls Paint to interior side of exterior walls	20,	83 S	F 1.00	0 20,183	3
	C3012 Wall finishes to interior walls					
	Paint to walls	133,9	980 SI	= 1.00	133,980)
	Miscellaneous wall finishes / acoustical treatments		1 LS	69,945.40	69,945	5
		Total For Wall Finish	ies		224,108	3
	C3020 Floor Finishes					
	C3024 Flooring including base			_		
	Level 0 Level 1		990 SI		,	
	Level 2	15,2 16, ⁻			,	
	Level 2 Level 3	14,3				
	200010			0.10		_
		Total For Floor Finish	ies		259,402	2
	C3030 Ceiling Finishes					
	C3031 Ceiling finishes					
	Level 0		990 S		,	
	Level 1	15,2			,	
	Level 2	16,7				
	Level 3	14,3	868 S	F 6.35	5 91,237	/
		Total For Ceiling Finish	ies		312,706	õ
D10	CONVEYING					
	D1010 Elevator & Lift					
	D1011 Passenger elevators Passenger elevator, 4 stop including cab finish		1 E	A 115,000.00	0 115,000)
		Total For Elevator & L	fts		115,000	<u> </u>
D20	PLUMBING D2010 <u>Plumbing</u>					
	Plumbing	49,9	961 S	F 11.00	549,57	1
		Total For Plumb	ng		549,571	<u>ī</u>
D30	HVAC D3010 HVAC					

lealti hore RR I	eline Community College In Sciences, Music and Math Building Eline, WA Estimate Building	. OF ESTIMATE	Gr	oss Floor Area: Date: Prepared By:	49,961 December 15, 2017 AC
	Item Description	Quantity	Unit	Unit Cost	Totals
	HVAC	49,961	SF	40.50	2,023,421
		Total For HVAC			2,023,421
40	D4010 Fire Protection				
	Fire protection	49,961	SF	4.40	219,828
		Total For Fire Sprinkler System			219,828
50	ELECTRICAL D5000 Electrical				
	Electrical	49,961	SF	39.00	1,948,479
		Total For Electrical			1,948,479
10	E1010 EQUIPMENT				
	E1016 Laundry and dry cleaning equipment Laundry room equipment	1	LS	8,500.00	8,500
	E1027 Laboratory equipment Laboratory equipment, headwalls and lab casework	1	LS	82,000.00	82,000
	E1094 Residential equipment Break room appliances	1	LS	5,500.00	5,500
		Total For Equipment			96,000
20	FURNISHINGS E2010 <u>Fixed Furnishing</u>				
	E2012 Fixed casework Casework / instrument lockers	1	LS	159,875.20	159,875
	E2013 Blinds and other window treatments Window treatments	1	LS	32,000.00	32,000
	E2014 Fixed floor grilles and mats Entrance mats and frames	1	LS	12,000.00	12,000
		Total For Furniture			203,875
	F10 SPECIAL STRUCTURES F1010 Special Structure				
	No work anticipated				N/A

Shoreline Community College				C & N Consult	ants, Inc.
Health Sciences, Music and Math Building		Gro	oss Floor Area:	49,96	1 SF
Shoreline, WA			Date:	December 15, 201	7
PRR Estimate			Prepared By:	AC	
New Building					
DETA	IL OF ESTIMATE				
Item Description	Quantity	Unit	Unit Cost	Totals	
F1020 Special Construction No work anticipated	Total For Special Structure				<u>-</u> -
	Total For Special Construction				_
F20 SELECTIVE BUILDING DEMOLITION F2010 Building Element Demolition					
No work anticipated				N/	A
	Total For Selected Demolition				_

Shoreline Community College C & N Consultants, Inc. Health Sciences, Music and Math Building Shoreline, WA Date: December 15, 2017 PRR Estimate Prepared By: AC **Building Demolition DETAIL OF ESTIMATE** Quantity Unit Unit Cost Item Description Totals F 2020 Hazardous Components Abatement Abatement - Building 800 3.50 83,377 23,822 SF Abatement - Building 2,200 21,945 6,270 SF 3.50 Abatement - Building 2,300 17,580 SF 3.50 61,530 G1021 Building demolition Building 800 23,822 SF 6.25 148,888 Building 2200 6,270 SF 6.25 39,188 Building 2300 17,589 SF 6.25 109,931 % 464,858.25 15.50% 72,053 Mark ups TOTAL 536,911

	e Community College ciences, Music and Math Building ie, WA				C & N Consultants, Inc.
PRR Est	imate			Date:	December 15, 2017
Sitework	c - New Building Sites	vork Sumi	nary	Prepared By:	AC
No.	Element Description		Element Totals	Group Totals	
G	BUILDING SITEWORK			1,193,092	
G10	Site Preparation		240,420		
G20	Site Improvement		266,805		
G30	Site Mechanical Utilities		386,470		
G40	Site Electrical Utilities		299,397		
	Sub-Total General Conditions / General Requirements Sub-Total MACC	9.00%		1,193,092 107,378 1,300,470	
	GC Fee	5.00%		65,024	
	November 2017 Construction Cost Escalation, excluded (Included in C100 Forms)			1,365,494	
	TOTAL CONSTRUCTION COST			\$1,365,494	

Shoreline Community College
Health Sciences, Music and Math Building

C&N Consultants, Inc.

Date: December 15, 2017

Shoreline, WA PRR Estimate

Prepared By: AC

Sitework - New Building

DETAIL OF ESTIMATE Item Description Quantity Unit Unit Cost Totals								
Item Description	Quantity	Unit	Unit Cost	Totals				
Site Preparation estimate prepared by civil engineer	•							
G 1020 Site Demolition and Relocations								
Demolish and remove								
Remove Storm, Water & Sewer Utilities	1	LS	10,000.00	10,000				
Miscellaneous Utility Item Removal	1	LS	5,000.00	5,000				
G 1030 Site Earthwork								
Clearing	20,000	sf	0.25	5,000				
Excavation & Disposal of Unsuitable	760	су	27.00	20,520				
Gravel Borrow to Fill	2,600	су	32.00	83,200				
Earth Moving & Rough Grading	2,600	су	4.00	10,400				
Fine Grading	40,000	sf	0.25	10,000				
G1037 Erosion control								
Silt Fence	1,500	If	5.00	7,500				
Construction Entrance	2	ea	3,000.00	6,000				
CB Filter	10	ea	300.00	3,00				
Interception Ditch	450	lf	4.00	1,80				
Sediment Trap with Control Structure	1	ea	10,000.00	10,00				
Treatment Train Rental, Operation & Maintenance	4	month	12,000.00	48,00				
Treatment Train Mob. Setup, & Demobilization	1	ls	15,000.00	15,00				
Water Discharge Monitoring & Test	1	ls	5,000.00	5,00				
	For Site Preparation		_	240,42				
<u>Site Improvements</u>								
Site paving								
7.01 Asphalt Driveway Pavement, Incl. Base	4,500	SF	4.50	20,25				
7.02 Concrete Pavement - Loading Docks	1,200	SF	8.00	9,60				
7.03 Cast-in-Place Concrete Vertical Curb	100	LF	22.00	2,20				
G 2030 Pedestrian Paving								
Entry plaza paving	4,400	SF	10.00	44,00				
Concrete sidewalks	7,500	SF	6.90	51,75				
Concrete curbs	660	LF	19.00	12,54				
G2033 Exterior steps								
Concrete steps including rails	1	LS	4,500.00	4,50				
G2042 Retaining walls								
Reinforced concrete footings at retaining walls	170	LF	71.50	12,15				
Reinforced concrete retaining walls	638	SF	39.75	25,34				
G2045 Site furnishings								
	1	LS	6,500.00	6,500				
Site furnishings	!		,	•				
Site furnishings G2049 Miscellaneous structures	'		,	,				

Shoreline Community College C & N Consultants, Inc. Health Sciences, Music and Math Building Shoreline, WA Date: December 15, 2017 PRR Estimate Prepared By: AC Sitework - New Building **DETAIL OF ESTIMATE** Item Description Quantity Unit **Unit Cost Totals** G2051 Fine grading and soil preparation 3,040 Fine grading and soil preparation 7,600 SF 0.40 G2053 Top soil and planting beds Topsoil 141 CY 40.00 5,630 G2055 Planting Shrubs and groundcover plantings 7.600 SF 3.00 22.800 14 EΑ 450.00 6,300 G2057 Irrigation system Irrigation system, complete 7,600 SF 2.00 15,200 266,805 **Total For Site Improvement** G30 Site Mechanical Utilities Mechanical utilities Water system 3,500.00 10,500 Connect to Exist. Water Main - wet tap 3 ea 6" Ductile Iron Pipe, Restrained, Including Trench 200 lf 55.00 11,000 6" Gate Valve 3 ea 1,650.00 4,950 6" Bend 2 ea 350.00 700 Fire Depas latent Connection ea 3,000.00 3,000 Fire Hydrant Assembly 2 ea 5,100.00 10,200 Post Indicator Valve 3,000.00 3,000 ea Bollard for Hydrant Protection 6 300.00 1,800 ea 100 lf 20.00 2,000 Domestic Service Line - 2" lf Irrigation Service Line - 2" 50 20.00 1,000 Double Checkvalve in Box - 2" Irrigation 1 2,000.00 2,000 ea Dispose of Unsuitable 180 22.00 3,960 су 180 Gravel Borrow for Trench Backfill су 32.00 5,760 Sanitary sewer Connect to Exist. Sewer Main 1,000.00 1,000 1 ea 55.00 22,000 Sewer Main -8" 400 lf Sewer Manhole 1,400.00 4,200 3 ea 6" PVC Side Sewer, Including Trench 100 lf 45.00 4,500 Clean out 2 ea 800.00 1,600 22.00 9,900 Dispose of Unsuitable 450 СУ Gravel Borrow for Trench Backfill 14,400 32.00 450 су Storm drainage 6.01 Connect to Existing System 1 600.00 600 ea 14.000 6.02 Roof Drain Pipe, Including Trench 400 lf 35.00 lf 6.03 8" Storm Drain Pipe, Including Trench 200 30.00 6,000 6.04 12" Storm Drain Pipe, Including Trench lf 16,000 400 40.00

C & N Consultants, Inc.

Shoreline Community College

Health Sciences, Music and Math Building

Shoreline, WA

Date: December 15, 2017 PRR Estimate Prepared By: AC

Sitework - New Building

6.05 4" Footing Drain, Including Trench			Unit Cost	Totals
	400	lf	35.00	14,00
6.06 Clean Outs	10	ea	800.00	8,00
6.07 Yard/Area Drain	5	ea	500.00	2,50
6.08 Catch Basin Type I	10	ea	1,500.00	15,00
6.09 Catch Basin Type 2	4	ea	4,000.00	16,00
6.10 Flow Splitter Modification	1	ea	5,000.00	5,00
6.11 Infiltration Pond Expansion	1100	су	6.00	6,60
6.12 Pretreatment Pond Expansion	400	су	6.00	2,40
6.13 Berm Building or Overexcavation Allowance	1	is	15,000.00	15,00
6.14 Flow Control Structure Modification	1	ea	3,000.00	3,00
6.15 Chain link Fence for Pond	400	lf	45.00	18,00
6.16 Storm Filter WQ Facility	1	ls	25,000.00	25,00
6.17 Bioretention (Soil, Pipe, Gravel, etc)	1	ls	5,000.00	5,00
6.18 Dispose of Unsuitable - Trench Excavation	1000	су	22.00	22,00
6.19 Dispose of Unsuitable - Infiltration Pond Excavation	1500	су	22.00	33,00
6.20 Gravel Borrow for Trench Backfill	1000	су	32.00	32,00
6.21 Pavement Patching - Allowance	1600	sf	4.00	6,40
Natural gas trench				,
8.01 Trench Excavation	50	су	6.00	30
8.02 Dispose of Unsuitable	50	су	22.00	1,10
8.03 Gravel Borrow for Trench Backfill	50	су	32.00	1,60
8.04 Coordination	1	is	500.00	50
Total For Site Mec	hanical Utilities		_	386,47
G40 Site Electrical Utilities & Site Lighting				
Site electrical estimate completed by Hargis Engineers dated November 10th, 2017				
Primary power ductbank, SCC MV	150	LF	154.00	23,10
Primary power vaults/manholes	1	EA	14,080.00	14,08
Grounding	1	LS	14,300.00	14,30
B1800 Building Connection / Rework / Temp Provisions	1 1	LS LS	22,000.00	22,00 22,00
B2000/B2100 Building Connection / Rework / Temp Provisions Primary Power - Selective Demolition	1	LS	22,000.00 27,500.00	22,00 27,50
Site Lighting	1	LS	36,000.00	36,00
Telecomm Handholes	1	LS	13,640.00	13,64
Telecomm Duct Banks	1	LS	41,800.00	41,80
Inter-building Telecomm Backbone Cabling Infrastructure	1	LS	37,400.00	37,40
Site Security Systems	1	LS	8,525.00	8,52
Sub-Contractor Overhead and profit	15%		260,345.00	39,05

Shorelin	e Community College			C & N Consultants, Inc.
	ciences, Music and Math Building			Construction Cost Consultants
Shorelin			Gross Floor Area:	47,672 SF
PRR Esti	mate Renovation	Summary of Estimata		December 15, 2017
		Summary of Estimate	Prepared By:	AC
No.	Element Description	Element Totals	Group Totals	Cost Per SF
A10	FOUNDATIONS		30,000	0.63
A1010	Standard Foundation			-
	Special Foundation			-
	Slab on grade	30,000		0.63
A20	BASEMENT WALL CONSTRUCTION			-
A2010	Basement Excavation			-
A2020	Basement Wall Construction			-
B10	SUPERSTRUCTURE		1,005,256	21.09
B1010	Floor & Roof Construction	1,005,256		21.09
B20	EXTERIOR ENCLOSURE		700,000	14.68
B2010	Exterior Walls	250,000		5.24
B2020	Exterior Windows	450,000		9.44
B2030	Exterior Doors			-
B30	ROOFING		661,288	13.87
B3010	Roof Covering	661,288		13.87
C10	INTERIOR CONSTRUCTION		1,533,507	32.17
C1010	Partitions	1,057,003		22.17
C1020	Interior Doors	264,500		5.55
C1030	Fittings	212,005	i	4.45
C20	STAIRS		76,000	1.59
C2010	Stair Construction	76,000		1.59
C30	INTERIOR FINISHES		729,123	15.29
C3010	Wall Finishes	221,315		4.64
C3020	Floor Finishes	226,185		4.74
C3030	Ceiling Finishes	281,623		5.91
D10	CONVEYING		232,248	4.87
D1010	Elevators & Lifts	232,248		4.87
D20	PLUMBING		503,447	10.56
D2010	Plumbing	503,447		10.56
D30	HVAC		2,042,380	42.84
	1	1 1	1	i .

Shoreline	e Community College					C & N Consultants, Inc.
Health So	ciences, Music and Math Building					Construction Cost Consultants
Shoreline	•				Gross Floor Area:	47,672 SF
PRR Esti		_				December 15, 2017
Building Renovation Si			ary of Est		Prepared By:	AC
No.	Element Description			Element Totals	Group Totals	Cost Per SF
D3010	HVAC			2,042,380		42.84
D40	FIRE PROTECTION				420,563	8.82
D4010	Sprinkler System			420,563		8.82
D50	ELECTRICAL				2,034,288	42.67
D5000	Electrical			2,034,288		42.67
E10	EQUIPMENT				96,000	2.01
E1010	Equipment			96,000		2.01
E20	FURNISHINGS				193,050	4.05
E2010	Fixed Furnishings			193,050		4.05
F10	SPECIAL CONSTRUCTION				-	-
F1010	Special Structure					
F1020	Special Construction					
F20	SELECTIVE BUILDING DEMOLITION				776,125	
F2010	Building Demolition			776,125		16.28
		Sub-Total			11,033,274	231.44
	General Conditions / General Requirements		10.00%		1,103,327	23.14
		Sub-Total			12,136,602	254.59
	GC Fee		5.00%		606,830	12.73
	November 2017 Construction Cost				12,743,432	267.31
	Escalation, excluded (Included in C100 Forms)				-
	TOTAL CONSTRUCTION COST				\$12,743,432	267.31

Healt Shore PRR	eline Community College h Sciences, Music and Math Building eline, WA Estimate ing Renovation DETAIL OF ESTIMATE		Gri	oss Floor Area: Date: Prepared By:	47,672 December 15, 2017 AC	SF
	Item Description	Quantity	Unit	Unit Cost	Totals	
A10	FOUNDATIONS A1010 Standard Foundation					
	No work anticipated				N/A	
	Total For Standar	d Foundations				-
	A1020 Special Foundation					
	A1021 Pile foundations					
	No work anticipated				N/A	
	Total For Specie	al Foundations				-
	A1030 Slab on Grade					="
	A1031 Standard slab on grade					
	Patch and repair slab on grade for new installations	1	LS	30,000.00	30,000	
	Total For	Slab on Grade			30,000	<u>-</u> !
A20	BASEMENT CONSTRUCTION A2010 Basement Excavation					
	No work anticipated				N/A	
	Total For Basemo	ent Excavation				-
	A2010 Basement Walls					
	No work anticipated				N/A	
	Total For B	asement Walls				-
	B1010 Floor & Roof Construction					
	B1012 Upper floors construction Building 800					
	Bridge support Reinforced concrete moment frame columns Reinforced concrete moment frame beams Seismic joint and cover plate Bracing modifications	25 20 80	CY CY LF	2,062.50 2,062.50 218.75	41,250	
	Bracing modifications Brace frames Beam and column strengthening Roof diaphragm chords and drag member Supplemental blocking, strapping and nailing Continous steel ledger including anchorage Building 2,200	1 1 1 1	LS LS LS LS	150,000.00 120,000.00 68,006.25 61,205.63 45,562.50	120,000 68,006 61,206	

	eline Community College th Sciences, Music and Math Building			ross Floor Area:	C & N Consultants, Inc. Consultants, Inc. 47,672 SF	
Shore PRR	Shoreline, WA Date: C PRR Estimate Prepared By: Building Renovation DETAIL OF ESTIMATE					
	Item Description	Quantity	Unit	Unit Cost	Totals	
	Supplemental blocking, strapping and nailing Stitch plates including anchorage Rooftop equipment support Building 2,300 Supplemental blocking, strapping and nailing Supplemental framing from concrete rim to roof diaphragm Non-seismic upgrades	1 1 1 1 1 47,672	LS LS LS LS SF	23,625.00 51,300.00 8,775.00 53,763.75 44,550.00 5.63	51,300 8,775 53,764 44,550	
	Total For Floor &	Roof Construction			1,005,256	
B20	EXTERIOR CLOSURE B2010 Exterior Walls					
	B2011 Exterior wall construction Modifications / cleaning / insulation upgrades	1	LS	250,000.00	250,000	
	Total	For Exterior Walls			250,000	
	B2020 Exterior Windows					
	Glazing enhancements	1	LS	450,000.00	450,000	
	Total For	Exterior Windows			450,000	
	B2030 Exterior Doors					
	No work anticipated				N/A	
B30	Total ROOFING B3010 Roof Covering	For Exterior Doors				
	B3011 Roof finishes Building 800 Roofing system with 1/2" cover board, R30 Rigid insulation, vapor					
	retarder and gypsum base board, 1/2" thick Building 2,200 Roofing system with 1/2" cover board, R30 Rigid insulation, vapor	10,075	SF	16.50	166,238	
	retarder and gypsum base board, 1/2" thick Building 2,300 Roofing system with 1/2" cover board, R30 Rigid insulation, vapor	6,500	SF	16.50	107,250	
	retarder and gypsum base board, 1/2" thick	17,700	SF	16.50	292,050	
	B3012 Traffic toppings and paving membranes TPO walkway	1,000	SF	8.50	8,500	
	B3014 Flashings and trim Sheet metal flashings	1	LS	39,968.80	39,969	
	Miscellaneous					

Shore	eline Community College				C & N Consultants, In
	h Sciences, Music and Math Building		Gr	oss Floor Area:	47,672 SF
Shore	eline, WA			Date:	December 15, 2017
PRRI	Estimate			Prepared By:	AC
Build	ing Renovation				
	DETAIL OF ESTIMAT	<u>re</u>		1	ı
	Item Description	Quantity	Unit	Unit Cost	Totals
	Rough carpentry	1	LS	22,482.45	22,482
	Fall anchors including cable	1	LS	24,799.50	
		Total For Roofing			661,288
240	INTEDIOD CONSTRUCTION	•			
10	INTERIOR CONSTRUCTION C1010 Partitions				
	C1011 Fixed partitions				
	Metal studs	66,287	SF	4.55	301,607
	Batt insulation	66,287	SF	1.00	,
	Gypsum board, 5/8"	132,574	SF	2.80	,
	Gypsum board underlayment / multiple layers	43,165	SF	2.60	,
	Sound absorptive panels	1	LS	30,000.00	26,700
	C1013 Operable and folding panel partitions Operable partitions, not required				
	C1017 Interior windows and storefronts				
	Interior glazing including transoms and sidelights	2,400	SF	67.50	162,000
	Miscellaneous				
	Bulkheads and soffits	1	LS	11,918.00	
	Blocking and backing	1	LS	7,150.80	6,364
	Total Fo	r Interior Partitions			1,057,003
	C1020 Interior Doors				
	C1021 Interior doors				
	Interior doors, frames and hardware				
	Solid core wood / wood glazed doors and HM frame	105	Γ.	2 020 00	252 500
	Per leaf Specialty hardware / rated doors / power actuators / acoustics	125 1	EA LS	2,020.00 12,000.00	- ,
	Tota	I For Interior Doors			264,500
	C1030 Specialties	TO INICION DOORS			204,000
	o 1000 opeciaties				
	C1032 Fabricated compartments and cubicles				
	Toilet partitions ADA toilet partition	6	EA	1,610.00	9,660
	STD toilet partition	12	EA	1,415.00	
	Urinal screens	6	EA	555.00	
	C1033 Storage shelving and lockers				
	Janitors mop rack and shelving	4	EA	450.00	1,800
	C1035 Identifying devices				
	Code signage	47,672	SF	0.16	7,628
		,		27.0	.,

Chavalina Community Callege				
Shoreline Community College		0		C & N Consultants, Inc.
Health Sciences, Music and Math Building		Gr	oss Floor Area:	47,672 SF
Shoreline, WA			Date:	
PRR Estimate			Prepared By:	AC
Building Renovation DETAIL OF ESTIMA	TE			
			11.11.0	
Item Description	Quantity	Unit	Unit Cost	Totals
Wayfinding and room identification signage	47,672	SF	0.38	18,115
Exterior building signage	1	LS	10,000.00	10,000
C1037 General fittings and misc. metals				
Miscellaneous metals, allow 0.4#/SF	19,069	LB	3.25	61,974
Elevator pit ladders	1	EA	800.00	- /-
Fire extinguisher cabinets	12	EA	230.00	
Corner guards	47,672	SF	0.16	, -
Grab bars at restrooms	6	EA	240.00	,
Mirrors at restrooms	6	EA	165.00	.,
Restroom accessories	1	LS	14,000.00	000
Fixed markerboards and whiteboards	1	LS	54,957.10	
Total For Fittings	and Specialty Items			212,005
•				
C20 STAIRS C2010 Stair Construction				
C 2010 Stair Construction including railings and finish				
New stairs at 800	1	LS	76,000.00	76,000
Total Fo	r Stair Construction			76,000
C30 INTERIOR FINISHES				
C3010 Wall Finishes				
C3011 Wall finishes to inside exterior walls				
Paint to interior side of exterior walls	22,000	SF	1.00	22,000
C3012 Wall finishes to interior walls				
Paint to walls	132,574	SF	1.00	- /-
Miscellaneous wall finishes / acoustical treatments	1	LS	66,740.80	66,741
	tal For Wall Finishes			221,315
C3020 Floor Finishes				
C3024 Flooring including base	20.450	O.F.	E 40	400.705
Building 800	20,150	SF	5.10	,
Building 2,200	6,500	SF	5.10	
Building 2,300	17,700	SF	5.10	90,270
Tota	al For Floor Finishes			226,185
C3030 <u>Ceiling Finishes</u>				
C3031 Ceiling finishes				
Building 800	20,150	SF	6.35	127,953
Building 2,200	6,500	SF	6.35	
Building 2,300	17,700	SF	6.35	112,395

Healt Shor PRR	eline Community College h Sciences, Music and Math Building eline, WA Estimate ing Renovation		Gr	oss Floor Area: Date: Prepared By:	47,672 SF December 15, 2017
	Item Description	Quantity	Unit	Unit Cost	Totals
		eiling Finishes	Offic	OTHE GOOD	281,623
D10	CONVEYING D1010 <u>Elevator & Lift</u>	·			
	D1011 Passenger elevators Allowance for new elevators at 800 and 2300	2	EA	116,124.00	232,248
	Total For E	levator & Lifts			232,248
D20	PLUMBING D2010 <u>Plumbing</u>				
D30	HVAC	19,146 19,146 19,146 19,146 15% 17,697 17,697 17,697 17,697 17,697 15%	SF SF SF SF SF SF SF	1.75 2.20 6.70 0.80 219,221.91 1.75 2.40 7.40 0.80 218,557.95	42,121 128,278 15,317 32,883 N/A 30,970 42,473 130,958
	HVAC estimate completed by Hargis Engineers dated November 10th, 2017 Music Building 800 Division 23 - HVAC, General Provisions Division 23 - HVAC, VRF Eequipment and Piping Division 23 - HVAC, Ductwork and Insulation Division 23 - HVAC, Built Up HVAC Units Division 23 - HVAC, DOAS Unit Division 23 - HVAC, Support equipment Division 23 - HVAC, Variable Air Volume Units Division 23 - HVAC, Outlets, Inlets, Exhaust fans, etc Division 23 - HVAC, Energy Management System	19,146 19,146 19,146 7,000 12,500 19,146 32 19,146 19,146	SF SF SF CF CF SF EA SF	3.40 8.80 6.80 10.40 6.40 4.70 1,400.00 1.40 7.40	168,485 130,193 72,800 80,000 89,986 44,800 26,804

	Gr	oss Floor Area:	47 670		
		000 / 1001 / 1104.	47,672		
		Date:	December 15, 2017		
PRR Estimate Prepared By:					
MATE					
Quantity	Unit	Unit Cost	Totals		
6,532	SF	3.40	22,209		
6,532	SF	8.80	57,482		
6,532	SF	6.80	44,418		
6,500	CF	6.40	41,600		
6,532	SF	4.70	30,700		
10	EA	1,400.00			
6,532	SF	1.40	9,145		
6,532	SF	7.40	48,337		
17,697	SF	3.40	60,170		
17,697	SF	7.20	127,418		
17,697	SF	6.80	120,340		
23,006	CF	10.40	239,263		
		3.40	78,221		
			117,500		
		,	,		
17,697	SF	7.40	,		
Total For HVAC			2,042,380		
ember					
19,146	SF	5.50	105,303		
10,000	SF	5.50	55,000		
1	LS	35,000.00	35,000		
6,532	SF	5.50	35,926		
1	LS	30,000.00	30,000		
		5.50			
8,000		5.50			
1	LS	18,000.00	18,000		
Fire Sprinkler System			420,563		
	Quantity 6,532 6,532 6,532 6,532 10 6,532 6,532 17,697 17,697 17,697 23,006 23,006 23,006 47 40 17,697 17,697 Total For HVAC ember 19,146 10,000 1 6,532 1 17,697 8,000 1	Quantity Unit	Quantity Unit Unit Cost		

D5000 Electrical

Electrical estimate completed by Hargis Engineers dated November 10th, 2017 $\,$

Shoreline Community College C & N Consultants, Inc. Health Sciences, Music and Math Building 47,672 SF Gross Floor Area: Shoreline, WA Date: December 15, 2017 PRR Estimate Prepared By: AC **Building Renovation DETAIL OF ESTIMATE** Unit Cost Item Description Quantity Unit Totals Music Building 800 Building Electrical Selective Demolition (Division 26) 19,146 SF 1.50 28,719 Building Electrical (Division 26) 19,146 SF 36.00 689,256 Building Telecommunications (Division 27) 19,146 SF 4.50 86,157 SF Building Audio Visual Rough-In (Division 27) 19.146 1.25 23.933 Building Fire Alarm (Division 28) 19,146 SF 1.85 35,420 Building Electronic Security (Division 28) 1.80 SF 34,463 19,146 Health Science Classroom Building 2,200 Building Electrical Selective Demolition (Division 26) 6,532 SF 1.50 9,798 Building Electrical (Division 26) 6,532 SF 36.00 235,152 Building Telecommunications (Division 27) 6.532 SF 4.50 29.394 Building Audio Visual Rough-In (Division 27) 6,532 SF 1.25 8,165 Building Fire Alarm (Division 28) 6,532 SF 12,084 1 85 Building Electronic Security (Division 28) 6,532 SF 1.80 11,758 Building 2,300 Building Electrical Selective Demolition (Division 26) 17,697 SF 1.50 26,546 Building Electrical (Division 26) 36.00 637,092 17.697 SF Building Telecommunications (Division 27) 17,697 SF 4.50 79,637 Building Audio Visual Rough-In (Division 27) 17,697 SF 1.25 22,121 Building Fire Alarm (Division 28) 17,697 SF 1.85 32,739 SF Building Electronic Security (Division 28) 17,697 1.80 31,855 **Total For Electrical** 2,034,288 E1010 EQUIPMENT E10 E1016 Laundry and dry cleaning equipment LS 8,500.00 8,500 Laundry room equipment E1027 Laboratory equipment Laboratory equipment and lab casework LS 82,000.00 82,000 1 E1094 Residential equipment Break room appliances 1 LS 5,500.00 5,500 96,000 **Total For Equipment** E20 **FURNISHINGS** E2010 Fixed Furnishing E2012 Fixed casework Casework / instrument lockers LS 152,550.40 152,550 E2013 Blinds and other window treatments Window treatments LS 30,000.00 30,000 E2014 Fixed floor grilles and mats Entrance mats and frames LS 10,500.00 10,500

Shoreline Community College
Health Sciences, Music and Math Building
Shoreline, WA
Date:
December 15, 2017
PRR Estimate
Prepared By:

DETAIL OF ESTIMATE

| Unit Cost | Consultants, Inc.
| A7,672 SF |
| December 15, 2017
| AC |
| December 15, 2017
| December 15, 2017
| AC |
| December 15, 2017
| AC |
| December 15, 2017
| December 15, 2017
| AC |
| December 15, 2017

D				
ng Renovation DE	TAIL OF ESTIMATE			
Item Description	Quantity	Unit	Unit Cost	Totals
	Total For Furniture		_	193,050
F10 SPECIAL STRUCTURES F1010 <u>Special Structure</u>				
No work anticipated				N/A
	Total For Special Structure		_	
F1020 Special Construction				
No work anticipated				N/A
	Total For Special Construction		_	
F20 SELECTIVE BUILDING DEMOLITION F2010 <u>Building Element Demolition</u>				
F 2010 Building Elements Demolition				
Building 800	20,150	SF	14.00	282,100
Building 2,200 Building 2,300	6,500 17,700	SF SF	14.00 14.00	91,000 247,800
F 2020 Hazardous Components Abatement				
Building 800 Abatement, allow	20,150	SF	3.50	70,525
Building 2,200 Abatement, allow Building 2,300	6,500	SF	3.50	22,750
Abatement, allow	17,700	SF	3.50	61,950
	Total For Selected Demolition		_	776,125
	i olai Fui Selecleu Deilioillioii			110,123

Shorelin	e Community College					C & N Consultants, Inc.
Health S	ciences, Music and Math Building					Construction Cust Consultants
Shorelin	e, WA					
PRR Est	imate				Date:	December 15, 2017
3uilding	Renovation Sitework	Summ	ary of Es	timate	Prepared By:	AC
No.	Element Description			Element Totals	Group Totals	
G	BUILDING SITEWORK				1,923,569	
G10	Site Preparation			18,750		
G20	Site Improvement			317,331		
G30	Site Mechanical Utilities			690,350		
G40	Site Electrical Utilities			897,138		
		Sub-Total			1,923,569	
	General Conditions / General Requirements		9.00%		173,121	
		Sub-Total			2,096,690	
	GC Fee		5.00%		104,834	
	November 2017 Construction Cost				2,201,524	
	Escalation, excluded (Included in C100 Forms)				
	TOTAL CONSTRUCTION COST				\$2,201,524	

oreline Community College				(S)	C & N Consultants, In
alth Sciences, Music and Math Building				<u>OI</u>	Construction Cost Consultan
oreline, WA					December 15, 2017
R Estimate				Prepared By:	AC
ilding Renovation Sitework DE	ETAIL OF ESTIMATE				
Item Description	Qu	antity	Unit	Unit Cost	Totals
G10 Site Preparation					
G10 Site Preparation					
Building 800		1	LS	7,250.00	7,250
Building 2,300 Building 2,200		1 1	LS LS	5,750.00 5,750.00	5,750 5,750
Building 2,200			LS	5,750.00	
G20 Site Improvements	Total For Site Prep	paration			18,750
G 2010 Roadways					
Building 800		1	LS	61,000.00	61,000
Building 2,300		1	LS	57,500.00	57,500
Building 2,200		1	LS	17,000.00	17,000
G 2030 Pedestrian Paving					
Concrete sidewalks		8,500	SF	6.90	58,650
Concrete curbs		690	LF	20.60	14,214
G2033 Exterior steps					
Concrete steps including rails		1	LS	6,500.00	6,500
G2049 Miscellaneous structures					
Miscellaneous structures		1	LS	35,000.00	35,000
G2051 Fine grading and soil preparation					
Fine grading and soil preparation		8,000	SF	0.40	3,200
G2053 Top soil and planting beds					
Topsoil		148	CY	45.00	6,667
G2055 Planting					
Shrubs and groundcover plantings		8,000	SF	4.00	32,000
Trees		16	EA	450.00	7,200
G2057 Irrigation system Irrigation system, complete		8,000	SF	2.30	18,400
ingation system, complete			OI.	2.30	,
	Total For Site Impro	vement			317,331
G30 Site Mechanical Utilities					
Building 800		4	1.0	200 000 00	000 000
Mechanical utilities Building 2,300		1	LS	299,900.00	299,900
Mechanical utilities		1	LS	281,100.00	281,100
Building 2,200					
Mechanical utilities		1	LS	109,350.00	109,350

Shoreline Community College C & N Consultants, Inc. Health Sciences, Music and Math Building Date: December 15, 2017 Shoreline, WA PRR Estimate ACPrepared By: **Building Renovation Sitework** DETAIL OF ESTIMATE Quantity Unit **Unit Cost** Totals Item Description

Total For Site Mecha Site Electrical Utilities & Site Lighting	inical Utilities			690,35
·				
Site electrical estimate completed by Hargis Engineers dated November 10th, 2017				
Music Building 800				
Primary power ductbank, cable SCC MV	150	LF	154.00	23,10
Primary power vaults/manholes	130	LS	14,080.00	14,08
Grounding	1	LS	5,500.00	5,50
Primary Power - Selective Demolition	1	LS	5,500.00	5,50
Site Lighting	1	LS	18,150.00	18,1
Telecomm Handholes	1	LS	13,640.00	13,64
Telecomm Duct Banks	1	LS	77,385.00	77,38
Inter-building Telecomm Backbone Cabling Infrastructure	1	LS	60,500.00	60,50
Site Security Systems	1	LS	8,525.00	8,52
Sub-Contractor Overhead and profit	15%	LO	226,380.00	33,95
Sub-Contractor Overnead and profit	13 /0		220,300.00	55,50
Health Science Classroom Building 2,200	450		454.00	00.44
Primary power ductbank, cable SCC MV	150	LF	154.00	23,10
Primary power vaults/manholes	1	LS	14,080.00	14,08
Grounding	1	LS	5,500.00	5,50
Primary Power - Selective Demolition	1	LS	5,500.00	5,50
Site Lighting	1	LS	11,880.00	11,88
B1800 Building Connection / Rework / Temp Provisions	1	LS	22,000.00	22,0
Telecomm Handholes	1	LS	13,640.00	13,64
Telecomm Duct Banks	1	LS	77,385.00	77,38
Inter-building Telecomm Backbone Cabling Infrastructure	1	LS	60,500.00	60,50
Site Security Systems	1	LS	8,525.00	8,52
Sub-Contractor Overhead and profit	15%		242,110.00	36,3
Building 2,300				
Primary power ductbank, cable SCC MV	250	LF	154.00	38,50
Primary power vaults/manholes	2	EA	14,080.00	28,16
Grounding	1	LS	5,500.00	5,50
Primary Power - Selective Demolition	1	LS	8,250.00	8,2
Site Lighting	1	LS	18,920.00	18,92
B2000 Building Connection / Rework / Temp Provisions	1	LS	22,000.00	22,00
Telecomm Handholes	1	LS	13,640.00	13,64
Telecomm Duct Banks	1	LS	77,385.00	77,38
Inter-building Telecomm Backbone Cabling Infrastructure	1	LS	90,750.00	90,7
Site Security Systems	1	LS	8,525.00	8,52
Sub-Contractor Overhead and profit	15%		311,630.00	46,74
Total For Site Elec	trical Utilities			897,13

DIAGRAMS & SKETCHES

UPDATED CAMPUS MASTER PLAN



2017-2027 CAMPUS MASTER PLAN

The STE(A)M Center is the next replacement project in the college's Facilities Master Plan. The project addresses the institutional goals articulated in the master plan of building community, increasing accessibility, and fostering sustainable practices.

FACILITIES MASTER PLAN- CAPITAL PROJECT LIST:

1. Health Sciences and Advanced Manufacturing Classroom Complex

Project Type: Replacement		
A new 70,000 sf development consisting of a 55,000 sf building that serves dental hygiene, phlebotomy, medical lab technician, biology,	Design	2017-2019
anatomy and chemistry programs alongside a 15,000 advanced manufacturing building.	Construction	2019-2021

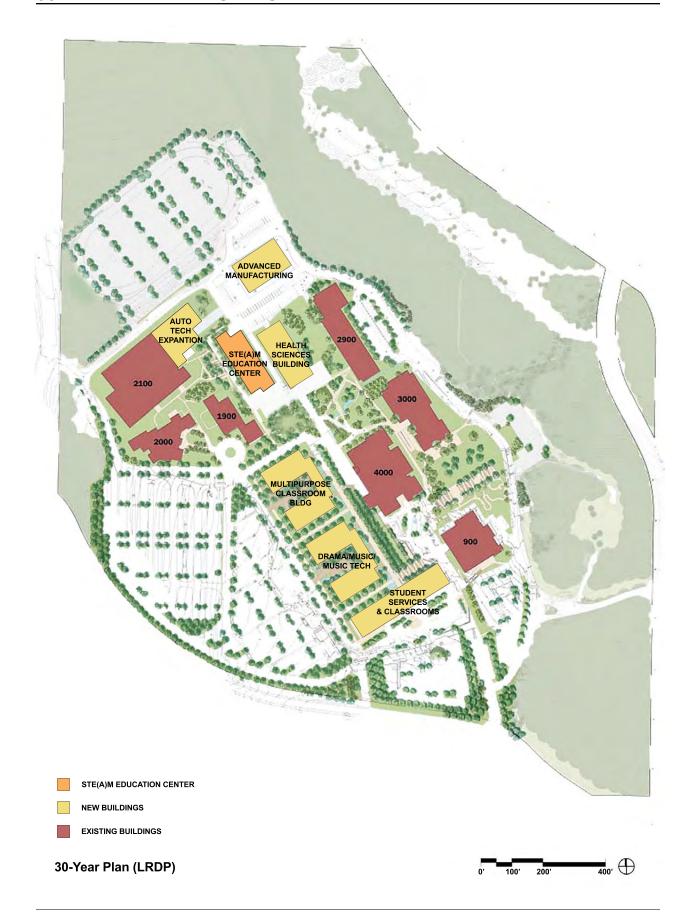
2. STE(A)M Education Center

Project Type: Replacement		
A new 50,000 sf building to provide space for interdisciplinary learning that serves nursing math and music programs while including general purpose classrooms that support STEM related	Design	2019-2021
programs in the adjacent Health Sciences and	Construction	2021-2023

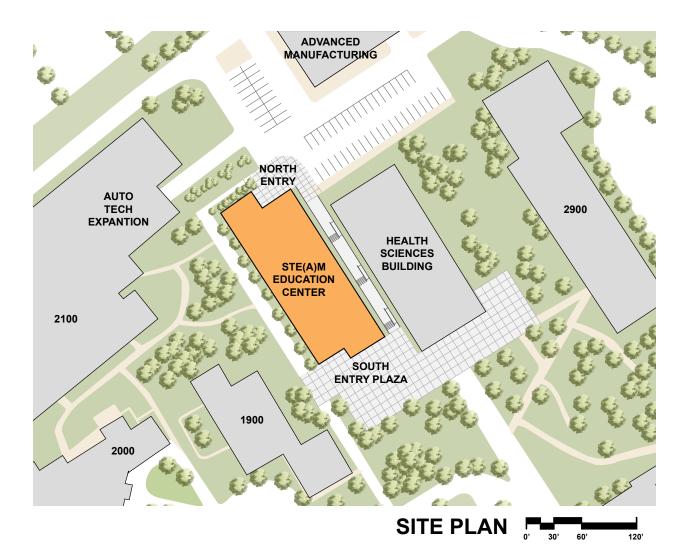
3. Auto Tech Expansion

Project Type: Matching		
A new 50,000 sf building to provide space for interdisciplinary learning that serves nursing math and music programs while including general purpose classrooms that support STEM related	Design	2019-2021
programs in the adjacent Health Sciences and Advanced Manufacturing Classroom Complex	Construction	2021-2023

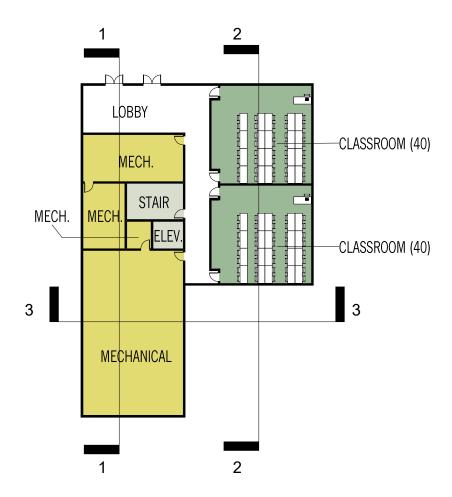
30-YEAR FACILITIES MASTER PLAN

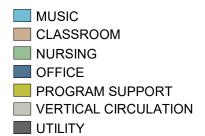


SITE PLAN



BUILDING PLANS

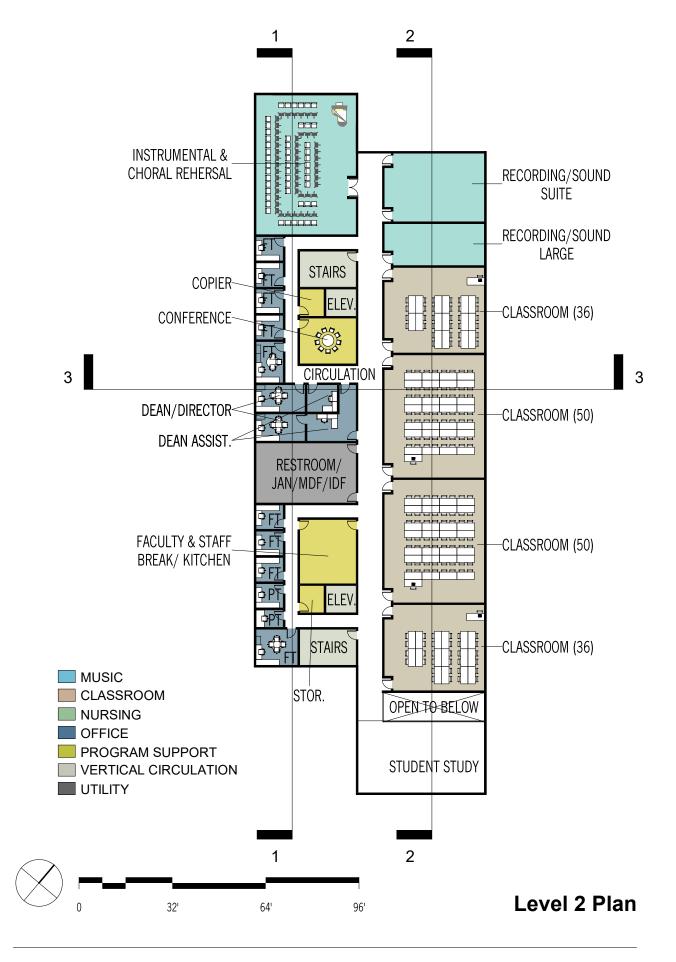


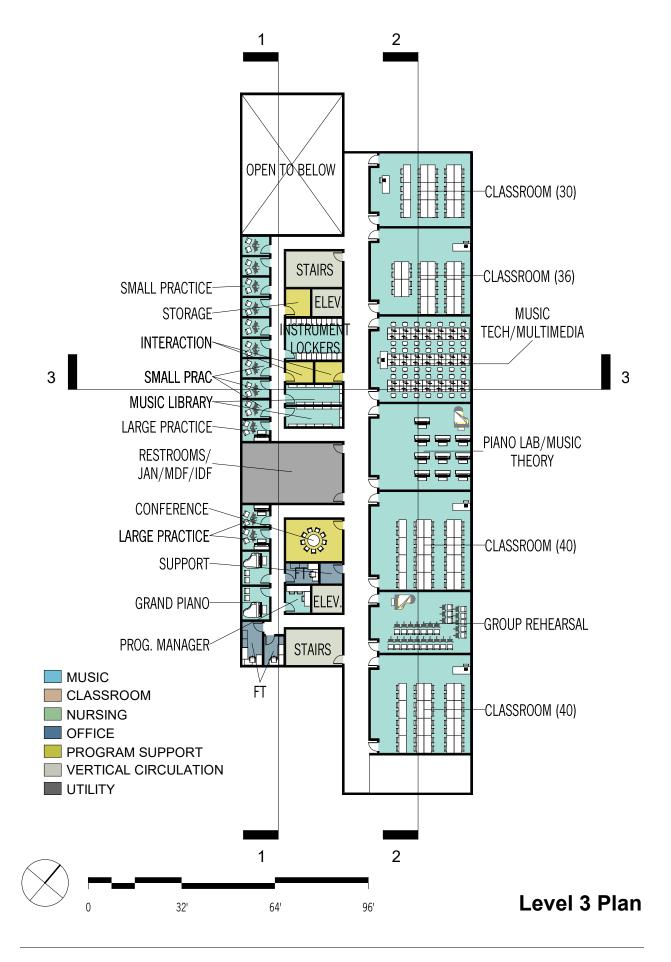


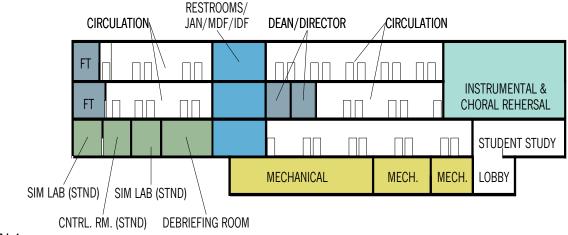


Level 0 Plan

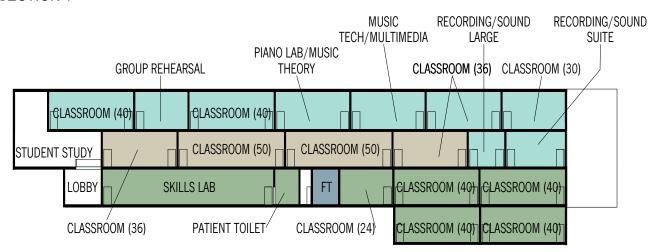




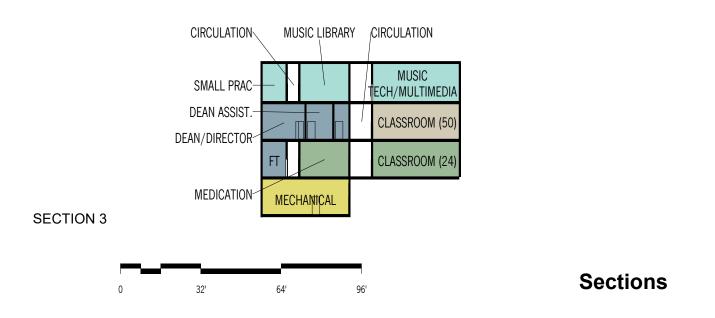


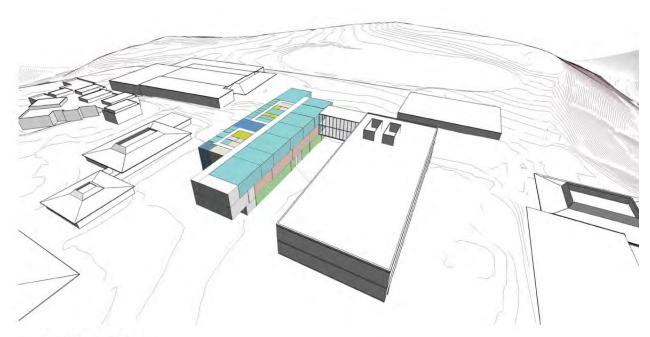


SECTION 1

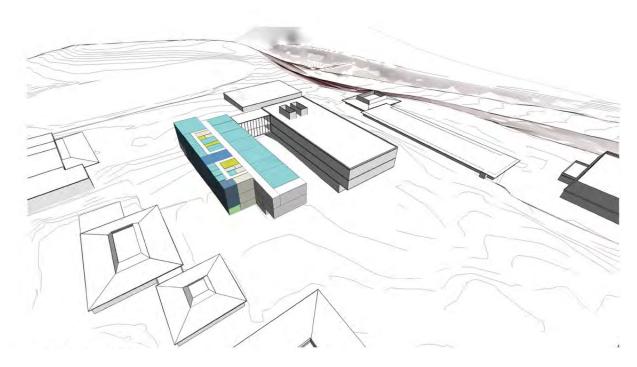


SECTION 2



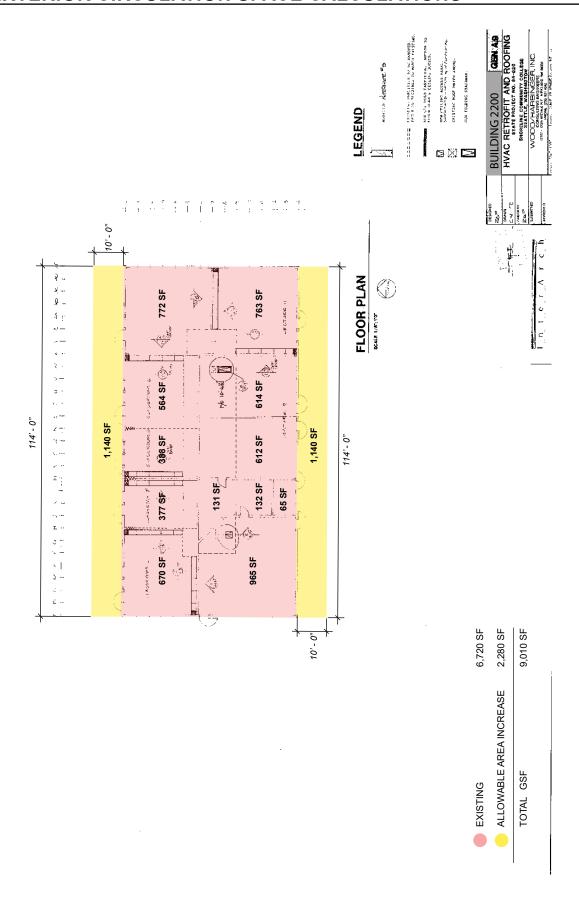


STE(A)M Educational Center - Looking Northwest



STE(A)M Educational Center - Looking Northeast

EXTERIOR CIRCULATION SPACE CALCULATIONS



APPENDIX



DESIGN TEAM ENGINEERING - EXISTING CONDITIONS

STRUCTURAL REPORT



Facility Assessment of Buildings 800, 2200 and 2300

October 20, 2017













October 20, 2017

Project: Shoreline Community College Facility Assessment of Buildings 800, 2200 and 2300

The structural review of four buildings on Shoreline Community College campus includes evaluation for adequacy over an additional 20 to 30 year life span. Our scope of work was limited to a structural evaluation of the vertical load (self-weight and occupancy) and lateral load (wind and seismic) carrying systems of the primary structure. This report represents our opinion based on our review of the original drawings, our on-site observations, and limited calculations. No finishes were removed to observe structure and no in-situ testing of the materials was performed. Investigation of the non-structural components, such as interior partitions, architectural finishes, and decorative facades, etc. was not part of the scope of work.

Our seismic evaluation of the structure followed the recommendations of the 2013 ASCE Seismic Evaluation and Retrofit of Existing Buildings (ASCE 41-13) which is the national standard for the seismic evaluation of existing structures. In interpreting the results, engineering judgment based on experience with similar structures has been applied.

Executive Summary:

Many of the structures on Shoreline Community College campus were constructed in the early 1960's and 1970's and were not designed and detailed to the same earthquake standards as they would need today. These buildings are showing signs of deterioration due to the exposure of the structure at the exterior and in the crawlspaces below the structures.

The buildings evaluated in this study employ a variety of structural systems including precast concrete, structural brick walls, wood framed roofs, steel framing. All of these materials have problems with deterioration with exposure over time. This is discussed further for each structure in the sections below but in general the concerns are:

- Precast concrete floor systems are connected with embedded steel plates and welded joints. Many of the connections in these buildings are exposed to moisture and weather. Some rust was observed at the embedded plates but spalling of the concrete was not observed.
- Structural brick walls on these buildings appear to be in relatively good condition with minimal signs of mortar deterioration. The walls are under-reinforced but because these particular buildings have long sections of solid walls on each side of the building, the walls themselves are not as much of a concern as their connections. The connections of the walls to the roof diaphragms and to the floors are inadequate to transfer seismic forces.
- Wood roof framing exposed to weather is showing many signs of deterioration in the framing and the sheathing. This not only affects the weather protection but the performance of a structure in a major earthquake.
- Steel braced frame lateral force resisting systems do not poses ductile detailing and are susceptible to fracture and poor energy dissipation during a seismic event.

Assessment:

The basic structural evaluation has included brief on-site visual observations of the visible portions of the structures. The study also includes a review of available construction drawings.

Vertical Load System

Vertical loads consist of the building weight, roof snow loads, and floor occupancy loads. Our limited evaluation of the structures indicates they are adequate for typical classroom and office loading.

Lateral Load System - Wind

Wind loads are not a concern for the primary structural system due to the buildings being one and two stories tall.

<u>Lateral Load System – Seismic</u>

The buildings have been reviewed for seismic safety based on ASCE 41-13. The purpose of an earthquake assessment is to determine the risk to human life posed by damage or failure of structures in a major earthquake. This evaluation has been for Life-Safety level of building performance. This means that in order for a building to be acceptable it must limit the damage that could cause a risk to the occupants of death or serious injury. The goal is for occupants to exit safely but the building may be damaged by the earthquake. Damage may be so extensive as to not be economically repairable.

The buildings located on the campus have experienced minor ground motions numerous times in their lifetime and show no damage from the earthquakes.

Geotechnical:

Geotechnical information has not been provided for the specific buildings in this study however based on previous work on the campus we know that the site has stable soils. No settlement was noticed during our site visit.

Building Descriptions and General Deficiencies (Summary of Findings):

Building 800

Building 800 is a two-story 20,150 square foot structure built in 1976. The structure consists of concrete foundation walls and spread footings supporting steel framed beams and columns at the second level with a 10" thick "Pre-Block" floor system and topping slab diaphragm supported by tension-only braced frames at the interior framing bay. Roof framing consists of truss joists, glulam and steel beams with a ¾" plywood roof diaphragm attached to perimeter plywood framed shear walls with brick siding at the exterior wall. Diaphragms are considered flexible for both roof plywood and floor topping slabs. Given the various vertical and horizontal irregularities identified in the review below, this system will not perform well in a seismic event.

Our review indicates the following:

- Brick siding: Efflorescence and staining due to water behind the masonry is visible near the second floor entrance at the bridge. Organic growth and staining near roof flashing is present in several locations around the roof. Waterproofing and flashing should be reviewed to address the moisture concerns observed.
- Bridge Connectivity: The bridge serving the upper level building entrance appears to be tied directly
 to the building and abutment without a seismic joint. This hard connection to the hillside will induce
 an extreme torsional irregularity in the lateral force resisting system for which this system is not
 designed to accommodate.

- Lateral System: The offset in exterior walls from the upper level to the lower level creates a discontinuous shear wall condition and constitutes a vertical irregularity in the lateral force resisting system for which this system does not appear to have been designed for.
- Lateral System: The upper level shear walls are much stiffer than the lower level tension-only braced frames which leads to a soft-story condition. This condition is classified as a vertical irregularity in the lateral force resisting system for which this system does not appear to have been designed for.
- Tension-Only Bracing: The braced frames in this building are not detailed for ductile yielding for seismic loading consistent with the requirements of the current building code. This system is expected to perform poorly under cyclic seismic loading given the myriad vertical and horizontal irregularities present in this structure. Furthermore, joint geometry in the braced frame details are susceptible to fatigue cracking and the lack of specified toughness in the weld metal may lead to brittle failure of the connections.
- Roof Sheathing Continuity: The roof framing has several levels and many of the diaphragm transitions include sloping framing with plywood sheathing. The diaphragm lacks continuous diaphragm chords or proper nailing from roof sheathing to diaphragm blocking at the top of wall. Additional blocking and nailing is required to transfer lateral forces to the shear walls below.
- Topping Slab Diaphragm: The diaphragm connection to the braced frames rely on rebar welded to the top flange of steel beams. Weldable rebar was not specified in the general notes and welding ordinary reinforcing may lead to brittle failure in the diaphragm connection.
- See "Non-Structural Components and Utilities" section below for additional comments.

Building 800 Remediation Strategy

The following recommendations are provided to increase the serviceable life of the building given the deficiencies noted above:

- 1. Independent support of the bridge will be necessary to de-couple the lateral force resisting system of the building from the bridge abutment and remove the extreme torsional irregularity from the system.
 - Provide a reinforced concrete moment frame on a grade beam foundation system.
 - b. Member sizes are anticipated to be on the order of 18" x 30" for columns, 18" x 24" for beam and 48" x 48" for the grade beam.
 - Reinforcing density will be in the range of 500 pounds per cubic yard.
 - d. Existing connections to the building structure will need to be severed and seismically jointed.
- 2. The soft-story and the vertical irregularity caused by the small, tension only steel X-bracing will need to be addressed by adding modern steel X-bracing detailed for the code level lateral forces.
 - a. Assume two bays of 5" diameter pipe X-braces will be added to each side of the building.
 - b. Existing beams and columns will be strengthened to accommodate the increased loading and gusset plates will be welded between beams and columns to accommodate the braces.
 - c. Existing foundations will require epoxy grouted reinforcing doweled into the face and additional spread footing area scabbed on to accommodate increased demands.
- 3. Roof diaphragm chords and drag members will be added from below (where feasible) to augment the diaphragm capacity. Where access from below is not feasible, roofing will be removed to install reinforcing.

- a. Assume 20 % of the roof level will require supplemental blocking, strapping and nailing.
- 4. The topping slab diaphragm at the steel framed floors will likely require a continuous angle ledge or plate expansion anchored to the Pre-Block joists and welded to the steel beams to address the brittle diaphragm connection concerns.
 - a. Assume 400 linear feet of steel angle reinforcement, expansion anchors at 24" oc and field welding.

Building 2200

Building 2200 is a one-story, 6,500 square foot structure built in 1965. The building consists of concrete foundation walls with embedded plates that are welded to embed plates in concrete pre-tensioned double T-beams. Exterior walls are reinforced structural brick with anchored plates welded to embed plates in foundation walls and concrete rim beams that uniformly distribute loads. The concrete beams are connected to the glulam roof beams with embedded steel plates with buckets bolted to the beams. Diaphragms are considered flexible with roof plywood and floor topping slabs.

Our review indicates the following:

- Roof Deterioration: Damage is visible at numerous ends of the glulam beams and around roof drains. Painting, staining or otherwise protecting the roof framing is recommended to prevent further damage and damaged roof sheathing near drains should be removed and replaced.
- Brick Wall Shear Strength: The brick walls are under-reinforced by today's code requirements. This
 deficiency includes the reinforcing between the brick walls and the concrete rim beams. The quantity
 of wall length in this building makes the risk to life-safety lower than the other buildings.
- Roof to Wall Connection: The connections at the top of the masonry walls do not provide adequate transfer of seismic forces from the roof to the walls. These are plywood panels nailed in between the glulam beams. The nailing between the roof sheathing and the panels and bolts between the panels and the concrete rim beam are deficient. Additional blocking and anchorage to the concrete is needed on all perimeters of the building.
- Floor to Lower Wall Connection: The floor double-tee beams are welded to steel embedded plates in the lower concrete walls. These plates and welds are exposed to weather and shows signs of rust and separation from the concrete. There are 4" thick concrete closure sections between beams that are too lightly reinforced to transfer seismic forces to the lower walls. Depending on the condition of the welds and the plates, the floor framing may not remain anchored to the lower walls in a major earthquake and excessive movement in the structure would occur.
- Rooftop Mechanical Framing: The rooftop mechanical framing and enclosure consist of steel posts
 bolted to the glulam beams supporting a steel platform. Seismic loads for rooftop mechanical
 platforms are amplified due to their location above the building. These cantilevered columns systems
 supporting rooftop platforms do not perform well in a seismic event.
- See "Non-Structural Components and Utilities" section below for additional comments.

Building 2200 Remediation Strategy

The following recommendations are provided to increase the serviceable life of the building given the deficiencies noted above:

- 1 The connection from concrete rim to roof diaphragm will require supplemental framing.
 - a. Assume 250 lineal feet of supplemental blocking and nailing for rim with Simpson clips at 24" o.c. and expansion anchors to concrete at 48" o.c.

- 2 Embedded plates which tie the floor framing to the foundation walls will likely require stitch plates and expansion anchors to tie the pre-cast double tees to the foundation.
 - a. Assume 130 steel stitch plates with (4) expansion anchors each.
- Mechanical rooftop equipment support will require lateral bracing.
 - a. Assume field bolted angle brace kickers at each column.
 - b. Assume all exposed steel to be galvanized and any modifications to exposed steel will require touch-up of the galvanizing.

Building 2300

Building 2300 is a one-story, 17,700 square foot structure built in 1970 with a partial daylight basement and crawl space. The building consists of concrete spread footings and basement walls with embedded plates that are welded to embed plates in concrete pre-tensioned double T-beams. Exterior walls above grade are lightly reinforced masonry supporting a concrete header above. The concrete beams are connected to the glulam roof beams with embedded steel plates with buckets bolted to the beams. Wood framed shear panels are located between the glulam beams from the roof sheathing to the top of concrete beam, except where louvers are located per the architect. The lateral force resisting system consists of plywood sheathed interior shear walls around the perimeter of the auditorium anchored to the topping slab with ½" diameter anchor bolts. Diagonal steel rod X-bracing is provided to transfer lateral forces from the steel framed high roof to the wood framed low roof level. Diaphragms are considered flexible with metal deck high roof, plywood low roof and concrete floor topping slabs. The style and details of construction are the same as the earlier buildings built in 1965.

Our review indicates the following:

- Roof Deterioration: Damage is visible at the ends of the glulam beams and staining is present on the underside of wood framed roof overhang. Painting, staining or otherwise protecting the wood framing is recommended to prevent further damage.
- Roof Sheathing: The roof sheathing of this building is indicated as 1-1/8" plywood. This is better than the 2x t&g boards used on the earlier buildings however the nailing specified on the construction documents is insufficient for seismic forces in the sub-diaphragms.
- Diaphragm Reinforcement at Openings: Due to the size of the opening in the wood framed low roof, reinforcing is needed to resolve sub-diaphragm forces at re-entrant corners. Without reinforcement, the diaphragm tends to split / rip at these corner conditions resulting in a loss of load transfer to the lateral force resisting elements.
- Brick Wall Shear Strength: The brick walls are under-reinforced by today's code requirements. This deficiency includes the reinforcing between the brick walls and the concrete rim beams. Although the quantity of wall length helps reduce the risk to life-safety, the walls are expected to be damaged beyond repair in a major earthquake.
- Roof to Wall Connection: The connections at the top of the masonry walls do not provide adequate transfer of seismic forces from the roof to the walls. These are plywood panels nailed in between the glulam beams. The nailing between the roof sheathing and the panels and bolts between the panels and the concrete rim beam are deficient. Additional blocking and anchorage to the concrete is needed on all perimeters of the building. Out-of-plane forces on the masonry walls are resisted through the saddle connection of the glulam beams to the concrete wall header, a connection that is currently not sufficient to transfer forces in a major earthquake.
- See "Non-Structural Components and Utilities" section below for additional comments.

Building 2300 Remediation Strategy

The following recommendations are provided to increase the serviceable life of the building given the deficiencies noted above:

- 1. Assume additional diaphragm nailing is required over 75% of the roof area.
- 2. Assume additional diaphragm blocking, nailing and strapping is required over approximately 20% of the roof area.
- 3. The connection from concrete rim to roof diaphragm will require supplemental framing.
 - a. Assume 300 lineal feet of supplemental blocking and nailing for rim with Simpson clips at 24" o.c. and expansion anchors to concrete at 48" o.c.

Non-structural Components and Utilities:

Significant damage and injury can occur in earthquakes due to non-structural items. Current building codes require anchorage of items such as tall shelving and mechanical units. At the time that most of these buildings were constructed this anchorage was not a construction standard. The non-structural items were not reviewed as part of the study however it was noticed that there was an overall lack of anchorage. The following lists some of the typical components that often fail in earthquake causing risk to life-safety, exiting and building damage:

- Hung ceilings, light fixtures, sprinklers need to have lateral bracing.
- Shelving and storage racks need to be anchored to the floor or walls.
- Mechanical and electrical units need to be bolted to floor or roof framing.
- Piping in multi-story buildings needs to be braced so that failure does not cause water damage.
- Gas and water lines entering buildings need expansion joints to allow building movement.
- Bio hoods and units containing hazardous materials need to be braced to walls or floor.

Conclusion:

The general conclusions for this study are given in the top of the document under Executive Summary. Individual building comments are listed under Building Descriptions and General Deficiencies.

Owen Bower, PE, SE Associate Principal

Lund Opsahl

CIVIL REPORT



728 134th Street SW - Suite 200 Everett, WA 98204 Ph: (425) 741-3800 Fax: (425) 741-3900

Client: Schacht/Aslani Architects	Sheet <u>1 of 4</u>
Project: Shoreline Community College	Design by DCY
Allied Health & Music Building PRR	Date: 10/05/2017
Drainage & Utility Narratives - Renovation	Checked by: DCY
Project No. 212017.017	- · .

The following is the civil utilities section to be included in the overall report.

SANITARY SEWER SYSTEM

General Description

The college campus sewer system is owned and operated by Shoreline Community College. The sewer service purveyor is Ronald Wastewater District. Public sewer service to the campus is provided at the intersection of Carlyle Hall Road NW and Greenwood Avenue NW, where the college system connects to the public system.

Sanitary sewage from campus buildings is collected through side sewers to 8- or 10-inch sewer mains. These sewer mains convey sewage flows to a manhole in the parking lot east of Building 5000. From there, a sewer main conveys the flows down a steep hill to the intersection of Carlyle Hall Road NW and Greenwood Avenue NW.

Building 800 is separated from the rest of the college sewer system. Sewage from this building is discharged directly to the public sewer main in Greenwood Avenue NW.

BUILDING 800

Existing System

Unlike the rest of the buildings on the campus, sanitary sewer service to Building 800 is provided by a side sewer connecting directly to the public sewer main in Greenwood Avenue NW. The side sewer is 6 inches in diameter. The pipe material is unknown.

Proposed Improvements

Renovation of Building 800 will require replacement of the existing side sewer service line. Having been in service for more than 50 years, the side sewer has likely reached its design life, and a new service line will serve the building continually for decades to come. Building 800's new plumbing system may demand new connection points for rerouting of the side sewer. The replacement side sewer line should also connect to the public main in Greenwood Avenue NW.

Existing System

An 8-inch sewer main running south to north provides service to Building 2300. A side sewer service line connects the building to this sewer main. At the manhole outside the southwest corner of Building 2500, the sewer main turns west and runs between Building 2500 and Building 2600 to a 10-inch sewer main under the east campus circulation road. The 10-inch sewer main runs from northwest to southeast and connects to the sewer manhole in the parking lot east of Building 5000 as described in the General Description section. From there, a sewer main conveys the sewage to the existing public sewer main in Carlyle Hall Road NW where it intersects with Greenwood Avenue NW.

Proposed Improvements

Renovation of Building 2300 will require replacement of the existing side sewer service line. Having been in service for nearly 50 years, the side sewer has likely reached its design life, and a new service line will serve the building continually for decades to come. Building 2300's new plumbing system may demand new connection points for rerouting of the side sewer.

BUILDING 2200

Existing System

See Building 2300.

Proposed Improvements

Renovation of Building 2200 will require replacement of the existing side sewer service line. Having been in service for nearly 50 years, the side sewer has likely reached its design life, and a new service line will serve the building continually for decades to come. Building 2200's new plumbing system may demand new connection points for rerouting of the side sewer.

WATER SYSTEM

General Description

The North City Water District provides water for Shoreline Community College. Water is provided to the college campus from a 12-inch public water main along Carlyle Hall Road North. A 12-inch-diameter main enters the campus through a master meter at the intersection of Carlyle Hall Road North and Greenwood Avenue North. Shoreline Community College owns and operates the water system downstream of the master meter.

Downstream of the master meter, a 12-inch ductile iron (DI) water main runs southwest through a pump station that provides a pressure boost for the system. The water main then runs uphill to the main campus near Building 3000. The 12-inch DI main branches out and loops the campus along the main circulation road.

Static water pressure at the campus varies considerably due to campus topography. The North City Water District system is able to deliver a large flow to the master meter and the pump station. The existing pump station was designed to deliver 3,200 GPM water flow at 65 psi to the highest point on the campus.

BUILDING 800

Existing System

Water service to Building 800 is provided from the college water main in the main circulation road east of the PUB parking lot. From this water main, an 8-inch ductile iron main brings water to the entrance of the building access road. A fire hydrant is located at the end of this water main.

Domestic water service to Building 800 is provided from this 8-inch water main. The water main also provides water to the building fire sprinkler system through a double check valve assembly and a post indicator valve at the entrance of the building access road.

Proposed Improvements

Given the age of the domestic and fire protection water service lines (installed in 1989), these service lines may still be in good condition to serve the renovated building for two more decades if their sizes are still adequate for the renovated building.

New fire hydrants, one in the front and another near the back of the building, will be required for the renovated building. The existing fire hydrant at the entrance of the access road is too far for the building in current code. The existing access road will need to be widened for fire truck access to the new fire hydrant in the front of the building. A new fire truck access and turnaround will need to be provided to the new fire hydrant near the back of the building.

BUILDING 2300

Existing System

An 8-inch water main wraps Building 2300 on its west and north sides. This water main connects north to the campus water main loop under the campus circulation loop. Water service to Building 2300 is provided from this 8-inch water main for both domestic and fire protection services. Two fire hydrants are located distantly to the north of the building.

Proposed Improvements

New domestic water service and water for the building fire sprinkler service are required for the renovated building. A backflow preventer and a post indicator valve are required on the fire sprinkler service line. In addition, a new fire department connection is required.

At least one new fire hydrant will be required on the southwest side of the building. A new 8-inch water main extension is required to provide water to feed the new fire hydrant. The access path between Building 2500 and Building 2300 will need to be widened and improved to provide fire truck access to the new fire hydrant. The access road will need to have a hammer-head for fire truck turnaround.

BUILDING 2200

Existing System

The closest water mains to Building 2200 are near the southwest and northeast corners of Building 2300. It is unknown at this point how water is brought to serve this building from the nearby water mains. No fire hydrant is at or near the building site.

Proposed Improvements

New domestic water service and water for the building fire sprinkler service are likely required for the renovated building. A backflow preventer and a post indicator valve are required on the fire sprinkler service line. In addition, a new fire department connection is required.

At least one new fire hydrant will be required for the renovated building. A new 8-inch water main extension is required to bring water from the existing water main near the southwest corner of Building 1800 to feed the new fire hydrant. The new water main extension can also provide domestic and fire sprinkler services to the building. A new fire truck access road is required from the Building 1800 area to the new fire hydrant near the building. The access road will need to have a hammer-head for fire truck turnaround.

NATURAL GAS

General Description

The natural gas system at the college campus is owned and operated by Puget Sound Energy (PSE). The campus gas pipe system originates from a 4-inch gas main at the intersection of Carlyle Hall Road NW and Greenwood Ave NW. The 4-inch gas line runs southwest, continues up the hill to the main college campus, and extends to southeast of Building 1500. At this location, the gas main branches into two 2-inch lines running in the south and north directions. The north branch runs northwest to provide gas services to buildings on the northern part the campus. Each building served is equipped with an individual gas meter.

BUILDING 800

Existing System

Building 800 is not served by natural gas.

Proposed Improvements

If natural gas service is required for the renovated building, a new gas line will be needed. The gas service line can connect to either the gas main east of Building 500 or the gas main in Greenwood Avenue NW. A new gas meter is required.

Existing System

A 2-inch gas main runs around the northeast corner of Building 2300. The building is current served by natural gas. The gas meter is located on the north side of the building.

Proposed Improvements

Renovation of Building 2300 will likely require a new service line from the nearby existing gas main to the building. A new regulator and a meter are likely required.

BUILDING 2200

Existing System

Building 2200 is not served by natural gas. A 2-inch gas main runs through the site on the west side of the building.

Proposed Improvements

If natural gas is needed for the renovated building, gas service can be provided from the nearby main to the building. A new regulator and a meter are required.

STORM DRAINAGE SYSTEM

General Description

Shoreline Community College owns and operates storm drainage systems inside the college campus. The majority of the college campus drains to Boeing Creek. Storm runoff from the Buildings 2200 and 2300 area is collected into underground pipe systems. The collected water is conveyed east by first 12-inch and then 18-inch storm mains to the northeast corner of Building 2900. The 18-inch storm main turns south there and connects to a manhole east of Building 5000. From the manhole, water flows northeast through an 18-inch pipe and discharges to Boeing Creek.

Storm runoff from Building 800's roof and the immediately adjacent area is collected into underground pipe systems. The collected water is either conveyed to the 18-inch main that goes down to Boeing Creek or discharged to the adjacent ravine. Given that the ravine is closely adjacent, it is assumed that it drains to the ravine, but this needs to be verified.

Buildings 800, 2200, and 2300 were constructed before stormwater management was required. Therefore, there are no existing detention and water quality facilities in these areas.

Existing System

See General Description.

Proposed Improvements

Assuming the renovation will occur mainly interiorly within the current building footprint, storm runoff from the building roof will be collected by a roof drain system as is. The existing roof drain and area drain system may need to be updated and replaced depending on the condition of the existing system.

Expanding, extending, and repaving the fire truck access road will likely trigger stormwater management requirement. An on-site flow control facility (detention) is likely needed. Given the site topography and location, an underground vault or tank is likely a preferred option. Storm runoff from pollutant-generating impervious areas, such as the motor vehicle access areas, will need to be treated to meet the water quality treatment requirements before being discharged off the site.

Low Impact Design (LID) is required by city code. LID elements, such as a bioretention facility, will need to be implemented with the proposed development.

BUILDING 2300

Existing System

See General Description.

Proposed Improvements

Assuming the renovation will occur mainly interiorly within the current building footprint, storm runoff from the building roof will be collected by an area drain system as is. The existing area drain system may need to be updated and replaced depending on the condition of the existing system. The footing and wall drain will likely need to be replaced after having been in service many years.

Creating a new fire truck access road will trigger stormwater management requirements. An on-site flow control facility (detention) will be needed. Given Building 2300's location and site topography, an underground vault or tank is likely a preferred option. Storm runoff from pollutant-generating impervious areas, such as the motor vehicle access areas, will need to be treated to meet the water quality treatment requirements before being discharged off the site.

Low Impact Design (LID) is required by city code. LID elements, such as a bioretention facility, will need to be implemented with the proposed development.

Existing System

See General Description.

Proposed Improvements

Assuming the renovation will occur mainly interiorly within the current building footprint, storm runoff from the building's roof will be collected by an area system as is. The existing area drain system may need to be updated and replaced depending on the condition of the existing system.

Creating a new fire truck access road will trigger stormwater management requirements. An onsite flow control facility (detention) will be needed. Given Building 2200's location and site topography, an underground vault or tank is likely a preferred option. Storm runoff from pollutant-generating impervious areas, such as the motor vehicle access areas, will need to be treated to meet the water quality treatment requirements before being discharged off the site.

Low Impact Design (LID) is required by city code. LID elements, such as a bioretention facility, will need to be implemented with the proposed development.

MECHANICAL AND ELECTRICAL REPORT

Information Resource

- A. Field investigation performed September 5th, 2017
- B. Various existing drawings of the facility from SCC

General Overview

The existing Music Building (building 800) at Shoreline Community College is a late 70's vintage building with various program spaces including classrooms, sound studio rooms, instrument storage, professor offices and a large choral and instrumental teaching spaces. All of these spaces are located on the "upper floor" as the building was built up above grade with some general support spaces below for domestic water, fire and electrical gear. An addition was added on later directly below the upper floor. These spaces included additional classrooms, offices, storage and other spaces. There is no elevator between these levels. Plumbing fixtures are all original and do not meet ADA or water conservation requirements. In general, the overall mechanical systems appear to be in fair to poor condition serving the upper floor. At 40+ years old, many of the mechanical systems are at or near the end of their economic and useful life. The lower floor added on is utilizing a more recent variable refrigerant flow (VRF) type system, however, ventilation air was not added to this lower level space.

The existing Health Science classroom building (building 2200) is a late 50's / early 60's vintage building with nine classroom spaces that open to the exterior of the building. There are not any offices within this facility or corridor/ancillary type spaces. There are not any restrooms serving this facility. The HVAC system does not have cooling provided to this building. The heating comes from a small central plant from building 2400. The central plant in building 2400 has a boiler that is 50+ years old that is still running and another boiler that has been removed from service due to failure. A third boiler was added at a smaller capacity to fit in the available space as a temporary solution. There is no sprinkler service for this building.

The existing Health Science large lecture hall building (building 2300) is an early 70's vintage building with a large lecture hall, two classrooms, workroom, conference rooms, 18 offices and support spaces on the main floor. The basement level was originally configured for storage and mechanical space/electrical space. A portion of the floor was reconfigured into two classroom type spaces. Stairs are required to get into these classrooms. No elevator exists for these rooms. Fire sprinklers exist on the main floor, but not at the floor below. Plumbing fixtures are all original and do not meet current ADA or water conservation requirements. In general, the overall mechanical systems appear to be in fair to poor condition serving the upper floor. The lower floor stole capacity from the existing system to serve the lower floor classrooms added. Ventilation capacity is below health code levels as a result. The building has its own boiler plant. No cooling was available for this building. At 45+ years old, many of the mechanical systems are at or near the end of their economic and useful life.

Description of the Existing Mechanical Systems and Assessment Music Building (Building 800)

<u>Life Safety / Fire Protection system</u>

1. Fire Sprinklers: The fire sprinkler system for this building serves both the upper and lower floor of the building. The heads are not quick response type meeting current code requirements. Some storage areas do not meet the spacing requirements.

Plumbing Systems

- 1. Piping: The domestic water system is primarily galvanized and copper with some spot repairs and minimal ADA upgrades completed. The waste and vent system could not be viewed as part of this site study with the exception of some vent lines replaced with ABS as part of repair work. The system is original.
- 2. Domestic Water Heating: The domestic water heating system has been replaced at least once over the course of the buildings life. The current water heaters are both beyond its service life and in need of replacement.
- 3. Plumbing Fixtures: The plumbing fixtures are a mix of original on the upper floor and conservation saving fixtures on the lower floor. Full ADA restrooms were added to the restrooms at the lower level when built out. The original water closets use 3.6 Gals/flush and urinals use 1.6 gals/flush wasting significant water and not meeting current environmental standards. The drinking fountains do not meet ADA requirements.

HVAC System

1. Supply/Ventilation Air and HVAC Equipment Upper Floor: The supply air is provided from built-up PACE HVAC equipment located within the attic space between the large volume classroom spaces. The large classroom spaces have dedicated HVAC units while the smaller studios utilize constant heat and vent with poor man pneumatic motorized damper control at each of the sound studios and classrooms. Large louvers are spread throughout the building to support the spaces. Cooling units were added to each of the units through remote DX equipment located on grade outside of the building. All of the support and return ductwork is connected without the use of plenums. It could not be determined if full outside air economizer was configured for these units. Based on the size of the return ductwork, it is not likely that the HVAC units are set up for economizer as they vary in size from the supply ductwork. All of the HVAC equipment is from the original construction. (The ventilation air requirement was before the sick) building syndrome in the 80's and is likely not providing enough ventilation air to meet current health code standards.

- 2. <u>Supply/Ventilation Air and HVAC Equipment Lower Floor:</u> The supply air is provided from Mitsubishi VRF units at each space through centralized units. No ventilation ductwork could be confirmed at each unit. The heating and cooling is through two remote Mitsubishi Multicity VRF heat pump units that provide both heating and cooling. It is estimated that this system is 4-8 years old. Ventilation air requirement does not meet current health code standards.
- 3. <u>Exhaust Air:</u> The building has exhaust provided at the restroom spaces. Exhaust is not provided at the heavy copy areas not meeting current health code requirements.
- 4. <u>Central Plant</u>: There is no existing central plant for this building. Heating is through electric re-heat coils at the main HVAC units serving various zones. DX coils were added for cooling. No central chilled water is being provided through a central plant.
- 5. <u>Heat Recovery:</u> There is no heat recovery for this building.
- 6. <u>Energy Management Control System:</u> The control system within the building is a partially original pneumatic system with some upgrades to an energy management system. Some of the main air handlers have been upgraded to an energy management system as systems have failed. There is no scheduling at the thermostats or setback controls. The current system does not meet the current energy code.

Mechanical Code / Health Code / Energy Code

1. The ventilation for the building does not currently meet the requirements for outside air. A demand control ventilation system has not been installed on the main air handlers serving the building. The mechanical system is a constant heating and ventilation system without variable speed drives or the proper energy management system to reset the temperature within the air handlers appropriately. Many of the thermostats and air handler components are still using pneumatic controls that operate 24/7 and are not connected to the energy management system. The mechanical systems and controls installed have not met the energy code for at least the last twenty years.

Recommendations of Proposed Mechanical System Approach for Renovation Music Building (Building 800)

<u>Life Safety / Fire Protection System</u>

1. Fire Sprinklers: A new fire sprinkler system is required throughout the facility utilizing quick response heads. The most likely location for the main fire riser is within the basement area where the main switchgear and compressor for the pneumatic system is located. The riser with backflow device would be located in this location. The fire department connection would be located outside the building on the South wall at the upper level near the entrance. A fire hydrant is required to be within 50 feet of the fire department connection. Piping would be distributed throughout. A dry system is likely required based on coverage in the basement storage room that is not currently heated as well as the attic space with mechanical equipment.

Plumbing Systems

- 1. Piping: The domestic water system will replaced with new throughout with the exception of the sanitary waste piping. It is suggested that a scoping exercise be done to understand the condition of the existing piping and to quantitate the exact location of the piping and its depth for building upgrades.
- 2. Domestic Water Heating: The domestic water heating system will be new. The proposed system is a combination of an instantaneous hot water heater and a heat pump based hot water system as gas has not been brought to this location on site. The smaller tank size will allow for some capacity and recirculation. Since no showers or heavy hot water use is required, the instantaneous will save energy and provide the hot water when needed.
- 3. Plumbing Fixtures: The plumbing fixtures will be replaced with new throughout including water closets, urinals, lavatories, drinking fountains with bottle fillers, mop sinks and general use sinks as indicated on the architectural plans. Fixtures will meet ADA requirements and be water conservation type.

HVAC System

1. Supply/Ventilation Air and HVAC Equipment: The existing built-up air handlers are to be replaced in the current location for the choir and band locations. The louvers will need to be increased in size to support the ventilation air and economizer air requirement. These spaces are assembly type and exempt from the DOAS requirement. The remaining classrooms, offices and practice rooms will require a DOAS and VRF system to each space. The DOAS unit would be located in the mechanical attic with new ventilation ductwork routed to each VRF HVAC unit for each zone. Return ductwork from each zone will be routed back to the DOAS unit for heat recovery. Remote heat pump VRF units will provide the heating and cooling to each of the VRF HVAC units at each zone. Condensate lines from each unit will be pumped back to an approved discharge location. The VRF HVAC units can be in room type units, ceiling cassette style or a fan coil type unit. Each VRF HVAC unit would have Merv 13 filtration meeting LEED requirements. The DOAS unit will also have an air filtration system and will be provided with both a 2" pre-filter and a 4" filter meeting MERV 13 requirements or higher.

- 2. <u>Exhaust Air:</u> The restroom spaces will be enlarged to support the restroom upgrades. The exhaust system will be replaced with new and updated to support the increased fixture count. Where heavy copying is shown on the plans, a dedicated exhaust system will be provide to meet the current health code.
- Central Plant: No central plant is recommended for this site based on gas not being available. A refrigerant based VRF system is recommended based on the comments above.
- 4. <u>Heat Recovery:</u> Heat recovery will be provided through a flat plate heat exchanger with latent energy recovery as part of the DOAS unit.
- 5. <u>Energy Management Control System:</u> The College utilizes an energy management system (EMS). The entire system will be updated and brought up to current energy code and campus standards. The EMS system will have a connection to the fire alarm, lighting, sub-meters and security systems.

Description of the **Existing Mechanical Systems and Assessment**Health Science Classroom Building (Building 2200)

<u>Life Safety / Fire Protection system</u>

1. Fire Sprinklers: fire sprinkler system does not currently exist for this building. Building code has changed for educational facilities greater than 5,000 SF to be sprinkled. The code changed from 10,000 SF to 5,000 SF in 2009.

Plumbing Systems

 There are no fixtures or restrooms as part of this facility. A code review based on distances to restrooms and drinking fountains to other buildings needs to be confirmed that distances have not been exceeded.

HVAC System

- 1. Supply/Ventilation Air and HVAC Equipment: The supply air is provided from HVAC units located within soffited areas within each of the classroom spaces. The outside air comes from the roof and is distributed into the classrooms through sidewall diffusers at the soffits. Return air circulates from the bottom of the soffit. Relief air is through above door louvers. These louvers are completely open to the exterior without any back draft or motorized dampers letting debris and outside air directly into the building. Current code requires motorized dampers at relief louvers. The size off the supply grilles indicated that the ventilation air requirement for the quantity of people and square footage is not being met. Ductwork distribution is limited to the soffits.
- 2. Exhaust Air: The building does not have any exhaust system.
- 3. Central Plant: (There is no existing central plant for this building.) Heating is through a remote central plant from building 2400. The central plant is older than this building, 2200. One of the boilers has been removed from service due to failure. The second remaining boiler is original and has seen better days and is close to failure. A temporary boiler has been brought to building, but based on the square footage of the room is smaller in capacity than the one that failed. This project can be decoupled from the central plant, however, it is highly recommended to replace the boiler plant as part of this remodel. Chilled water and cooling is not being provided.
- Heat Recovery: There is no heat recovery for this building. 4.
- 5. Energy Management Control System: The control system within the building is an original pneumatic system. There is no scheduling at the thermostats or setback controls. The current system does not meet the current energy code.

Recommendations of Proposed Mechanical System Approach for Renovation **Health Science Classroom Building (Building 2200)**

<u>Life Safety / Fire Protection System</u>

1. Fire Sprinklers: A new fire sprinkler system will be provided throughout the facility utilizing quick response heads. With a sprinkler system not existing previously, a location within the building to locate a riser will be required. One classroom has a storage room that could potentially be utilized. An FDC will also be required to be located at the exterior within 50 feet of a fire hydrant. Location near fire truck access is needed. The exterior soffited areas will likely require sprinkler protection as well since the construction is of combustible materials and is within 20 feet of other buildings.

Piping would be distributed throughout. A dry system is likely based on the exterior coverage requirement.

Plumbing Systems

- 1. Based on whether fixtures and restrooms are required, the following are the recommended upgrades for the plumbing systems.
- 2. Piping: The domestic water system will be new throughout including the sanitary waste piping.
- 3. Domestic Water Heating: The domestic water heating system will be new. The proposed system is a combination of an instantaneous hot water heater and a heat pump based hot water system as gas has not been brought to this location on site. The smaller tank size will allow for some capacity and recirculation. Since no showers or heavy hot water use is required, the instantaneous will save energy and provide the hot water when needed.
- 4. Plumbing Fixtures: Any new plumbing fixtures will be new and as indicated on the architectural plans.

HVAC System

- 2. Supply/Ventilation Air and HVAC Equipment: The classrooms will require a DOAS and VRF unit to each space. The DOAS unit would be located on the roof with new ventilation ductwork routed to each VRF HVAC unit for each zone. Return ductwork from each zone will be routed back to the DOAS unit for heat recovery. A remote heat pump VRF unit located on the roof will provide the heating and cooling to each of the VRF HVAC units at each zone. Condensate lines from each unit will be pumped back to an approved discharge location (most probable location is the roof if plumbing systems are not added to the facility). The VRF HVAC units can be in room type units, ceiling cassette style or a fan coil type unit. Fan coils are most likely in the soffited area and ducted to sidewall grilles. The louvers at the exterior would be sealed closed or removed and patched. Each VRF HVAC unit would have Merv 13 filtration meeting LEED requirements. The DOAS unit will also have an air filtration system and will be provided with both a 2" pre-filter and a 4" filter meeting MERV 13 requirements or higher.
- 2. <u>Exhaust Air:</u> If a restroom is added, an exhaust fan will be required.
- Central Plant: No central plant is recommended for this site based on gas not being available and the condition of the existing central plant. A refrigerant based VRF system is recommended based on the comments above.

- 4. Heat Recovery: Heat recovery will be provided through a flat plate heat exchanger with latent energy recovery as part of the DOAS unit.
- Energy Management Control System: The College utilizes an energy management 5. system (EMS). The entire system will be updated and brought up to current energy code and campus standards. The EMS system will have a connection to the fire alarm, lighting, sub-meters and security systems.

Description of the **Existing Mechanical Systems and Assessment** Health Science Lecture and Classroom Building (Building 2300)

<u>Life Safety / Fire Protection system</u>

1. Fire Sprinklers: The fire sprinkler system for this building serves the upper floor only. The lower floor of the building does not have a fire sprinkler system throughout. The fire sprinkler header is located in the lower level on the North side. The heads are not quick response type meeting current code requirements. The entire building is required to be sprinkled to meet current code and life safety requirements.

Plumbing Systems

- 1. Piping: The domestic water system is primarily galvanized and copper with some spot repairs and minimal ADA upgrades completed. The waste and vent system could not be viewed as part of this site study with the exception of some vent lines replaced with ABS as part of repair work. The system is mostly original. It does appear that some restroom work was done around 15-20 years ago to support adding fixtures for a women's restroom. There are no restrooms or mop sinks at the lower level.
- 2. Domestic Water Heating: The domestic water heating system has been replaced at least once over the course of the buildings life. The current water heater is beyond its service life and in need of replacement.
- 3. Plumbing Fixtures: The plumbing fixtures are a mix of original and some from 15-20 years ago. Original restrooms were modified to try and support ADA requirements. Some fixtures were removed as part of this process. The current configuration does not meet current ADA requirements. The original water closets use 3.6 Gals/flush and urinals use 1.6 gals/flush wasting significant water and not meeting current environmental standards. The drinking fountains do not meet ADA requirements.

HVAC System

- 1. Supply/Ventilation Air and HVAC Equipment Upper Floor: The supply air is provided from two built-up HVAC units located within the lower level mechanical room. It appears that the large lecture hall is served from one unit that is in the center of the building. The second unit appears to be a constant heat and vent unit that serves all of the permiter offices and the two classrooms with exterior walls. The offices appear to utilize constant heat and vent with poor man pneumatic motorized damper control at each of the classroom or office with some having reheat coils. Louvers are located in the mechanical room for ventilation air and are sized large enough to support offices and classrooms from a ventilation standpoint, although should be verified. The lecture hall unit ventilation air requirement is not adequate and needs to be increased. The units do not have any cooling. It could not be determined if full outside air economizer was configured for these units. Based on the size of the return ductwork, it is not likely that the HVAC units are set up for economizer as they vary in size from the supply ductwork. All of the HVAC equipment is from the original construction. The ventilation air requirement was before the sick building syndrome in the 80's and is likely not providing enough ventilation air to meet current health code standards. Supply/Ventilation Air and HVAC Equipment Lower Floor: The supply air has been scabbed from the classroom unit for the two added classroom training type classes within the lower level. The ventilation is definitely not adequate. Return air could not be located from these spaces.
- 2. <u>Exhaust Air:</u> The building has exhaust provided at the restroom spaces. Exhaust is not provided at the heavy copy areas not meeting current health code requirements.
- 3. <u>Central Plant</u>: There is an existing hydronic heating central plant for this building located in the mechanical room. Current health code does not allow boiler plants to be in the same room as HVAC units. Concern is related to carbon monoxide poisoning or flue gases getting into the ductwork based on the negative pressure of the room. The heating plant is original with some components no longer functioning. Portions of the plant have been overridden to make the system operational.
- 4. <u>Heat Recovery:</u> There is no heat recovery for this building.
- 5. <u>Energy Management Control System:</u> The control system within the building is the original pneumatic system with some upgrades to an energy management system. Some of the main air handler components (actuators) have been upgraded to an energy management system as systems have failed. There is no scheduling at the thermostats or setback controls. The current system does not meet the current energy code.

Mechanical Code / Health Code / Energy Code

1. The ventilation for the building does not currently meet the requirements for outside air. A demand control ventilation system has not been installed on the main air handlers serving the building. The mechanical system is a constant heating and ventilation system without variable speed drives or the proper energy management system to reset the temperature within the air handlers appropriately. The thermostats and air handler components are still using pneumatic controls that operate 24/7 and are not connected to the energy management system. The mechanical systems and controls installed have not met the energy code for at least the last twenty years.

Recommendations of Proposed Mechanical System Approach for Renovation Health Science Lecture and Classroom Building (Building 2300)

Life Safety / Fire Protection System

1. Fire Sprinklers: A new fire sprinkler system is required throughout the facility utilizing quick response heads. The main fire riser is within the basement area and can be reconfigured to support the new system and added square footage required. The fire department connection would be located directly outside from the riser on the side of the building on the North wall. A fire hydrant is required to be within 50 feet of the fire department connection. Piping would be distributed throughout. A dry system is likely required based on coverage in the basement mechanical room and crawl spaces that is not currently heated.

Plumbing Systems

- 1. Piping: The domestic water system will replaced with new throughout with the exception of the sanitary waste piping. It is suggested that a scoping exercise be done to understand the condition of the existing piping and to quantitate the exact location of the piping and its depth for building upgrades.
- 2. Domestic Water Heating: The domestic water heating system will be new. The proposed system is a combination of an instantaneous hot water heater and a heat pump based hot water system as gas has not been brought to this location on site. The smaller tank size will allow for some capacity and recirculation. Since no showers or heavy hot water use is required, the instantaneous will save energy and provide the hot water when needed.
- 3. Plumbing Fixtures: The plumbing fixtures will be replaced with new throughout including water closets, urinals, lavatories, drinking fountains with bottle fillers, mop sinks and general use sinks as indicated on the architectural plans. Fixtures will meet

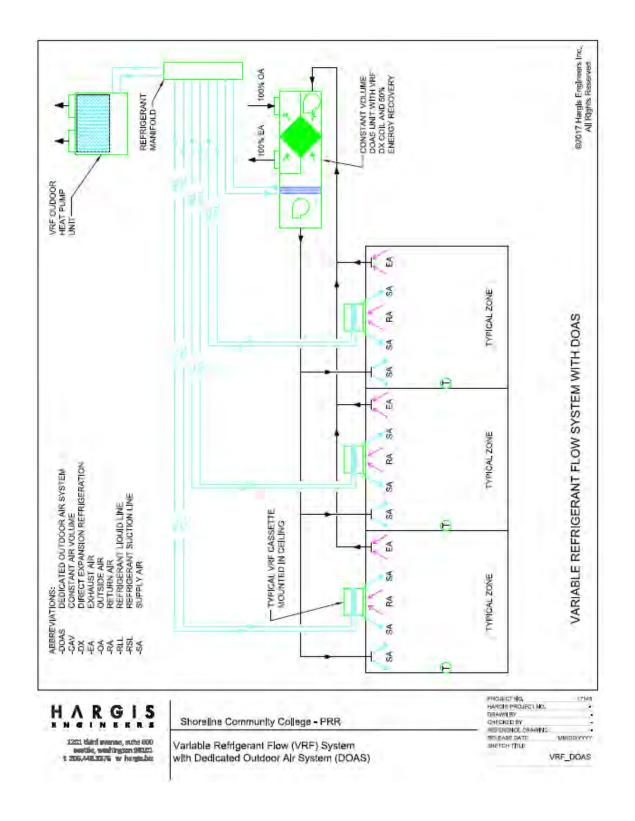
ADA requirements and be water conservation type. Since an elevator does not exist, it is likely that a restroom will be required at the lower level along with a mop sink and drinking fountain meeting current IBC and UPC requirements.

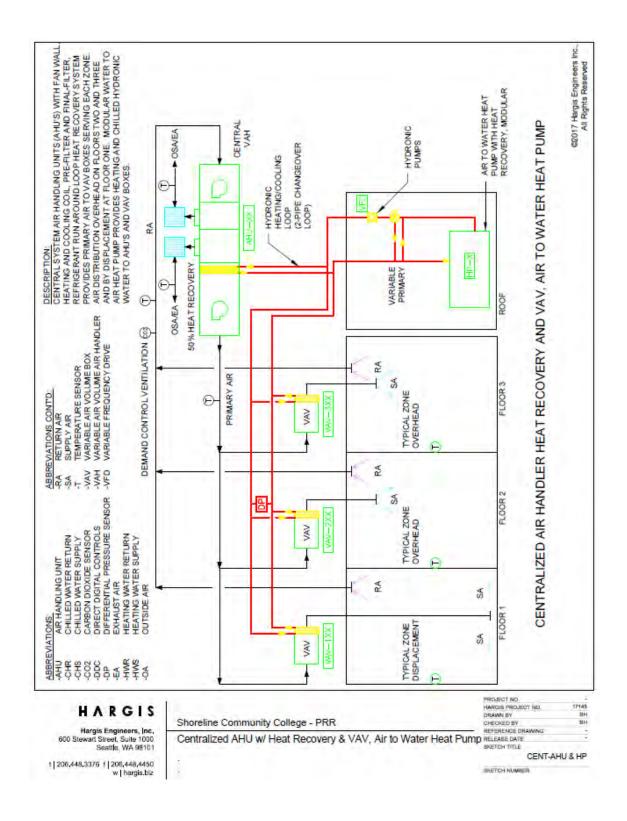
HVAC System

- Supply/Ventilation Air and HVAC Equipment: The large lecture hall is considered an 1. assembly type space and is not required to meet the requirement of being DOAS from the energy code. The HVAC system could be replaced in kind with modified ductwork to support economizer and ventilation requirements. The classrooms, offices and support spaces will require a DOAS system and VRF HVAC unit to each space or a high efficient VAV system meeting current energy code or an alternative system exceeding the energy code requirements. Since some of the spaces have lab facilities and blood is drawn, a high performance VAV system will meet the air change requirement for these types of spaces. Both systems could be utilized to balance the approach at the varying locations. The DOAS unit would be located in the mechanical room at the lower level mechanical room with new ventilation ductwork routed to each VRF HVAC unit for each zone. Return ductwork from each zone will be routed back to the DOAS unit for heat recovery. Remote heat pump VRF units will provide the heating and cooling to each of the VRF HVAC units at each zone. Condensate lines from each unit will be pumped back to an approved discharge location. The VRF HVAC units can be in room type units, ceiling cassette style or a fan coil type unit. Each VRF HVAC unit would have Merv 13 filtration meeting LEED requirements. The DOAS unit will also have an air filtration system and will be provided with both a 2" pre-filter and a 4" filter meeting MERV 13 requirements or higher. The alternate high performance VAV system would replace the VRF HVAC units with variable air volume (VAV) boxes. The DOAS system would be replaced with an HVAC unit sized large enough to support the DOAS requirement as well as the high performance VAV meeting the energy code. Hydronic heating would be required as part of the VAV system. Cooling would be provided at the main air handler only.
- 2. <u>Exhaust Air:</u> The restroom spaces will be enlarged to support the restroom upgrades. The exhaust system will be replaced with new and updated to support the increased fixture count. Where heavy copying is shown on the plans, a dedicated exhaust system will be provide to meet the current health code.
- 3. <u>Central Plant</u>: No central plant is recommended for this site based on the VRF approach. If the boiler plant is replaced utilizing the high performance VAV option, then the plant would be located in the lower level mechanical room or crawl space area. The HVAC equipment would be required to be separated from the central plant. The system would be new with pumps utilizing low temperature hydronic hot water.

Cooling would come from a high performance water to air heat pump located outside or on the roof.

- Heat Recovery: Heat recovery will be provided through a flat plate heat exchanger with 4. latent energy recovery as part of the DOAS unit or HVAC unit.
- 5. Energy Management Control System: The College utilizes an energy management system (EMS). The entire system will be updated and brought up to current energy code and campus standards. The EMS system will have a connection to the fire alarm, lighting, sub-meters and security systems.





ELECTRICAL NARRATIVE – RENOVATION ALTERNATIVE

Information Resource

- A. Field investigation performed September 5th, 2017
- B. Various existing drawings of the facility from Shoreline Community College

General Overview

The existing Music Building (Building 800) at Shoreline Community College is a late 70's vintage building with various program spaces including classrooms, sound studio rooms, instrument storage, professor offices and a large choral and instrumental teaching space. All of these spaces are located on the "upper floor" as the building was built up above grade with some general support spaces below for electrical systems, domestic water and fire. An addition was added on later directly below the upper floor. These spaces included additional classrooms, offices, storage and other spaces. There is no elevator between these levels.

The existing Health Science Classroom Building (Building 2200) is a late 60's vintage building with nine classroom spaces that open to the exterior of the building. There are not any offices within this facility or corridor/ancillary type spaces. There are not any restrooms serving this facility.

The existing Nursing Education Building (Building 2300) is an early 70's vintage building with a large lecture hall, two classrooms, workroom, conference rooms, faculty offices and support spaces on the main floor. The basement level was originally configured for storage and mechanical and electrical rooms; a portion of the floor was reconfigured into two classroom/nursing lab type spaces. Stairs are required to get into these lower level classrooms. No elevator exists.

Description of the Existing Electrical Systems

In general, the overall electrical systems for these buildings appear to be in fair condition but at 40+ years old, are at or near the end of their economic and useful life. Selective remodels were completed in Buildings 800 and 2300, but core electrical systems are predominantly original.

Power Distribution

Each of the buildings receives power from the Shoreline Community College (customer-owned) underground campus primary power distribution system at 4,160 Volts.

Building 800 is served from campus primary radial feeder "E". A 500kVA, dry-type secondary unit substation is installed in the basement – accessed from grade - providing approximately 28 VA/sf capacity at 480Y/277 Volts which appears to be adequate for the current building program. Branch panelboards are installed within the basement electrical room and throughout the building to serve building loads. Almost all of the power distribution

equipment in Building 800 is original, manufactured by Square D, and is UL listed. Availability of spare parts for this vintage of equipment is limited.

Building 2200 is served from campus primary radial feeder "C", which routes via Buildings 2400 and 2900. A 300kVA, dry-type secondary unit substation is installed below the building, in a sheltered (not enclosed) area. This space is accessed via areaway grate and ladder which is an electrical safety concern. In addition to Building 2200, this unit substation also serves adjacent Building 1800. The systems provides approximately 20 VA/sf capacity at 208Y/120 Volts which appears to be adequate for the current building program. Branch panelboards are installed within the basement electrical room and throughout the building to serve building loads. Almost all of the power distribution equipment in Building 2200 is original, manufactured by Square D, and is UL listed. Availability of spare parts for this vintage of equipment is very limited.

Building 2300 is served from campus primary radial feeder "D", which routes via Buildings 2500 and 50000. A 225kVA, dry-type secondary unit substation is installed within the lower level electrical room within the building, accessed from grade. The primary power system feeds through this building, to a downstream pad-mounted transformer serving Buildings 2000 and 2100. The system provides approximately 13 VA/sf capacity at 480Y/277 Volts which is not adequate for a typical skilled nursing building program. Branch panelboards are installed within the basement electrical room and throughout the building to serve building loads. Almost all of the power distribution equipment in Building 2300 is original, manufactured by Westinghouse, and is UL listed. Availability of spare parts for this vintage of equipment is very limited.

A power monitoring/metering system was not observed at any of the buildings reviewed. An emergency or standby generator or central inverter power system was not present in any of the buildings.

<u>Lighting and Lighting Controls Systems</u>

In each of the buildings, the existing building lighting systems consists primarily of fluorescent sources, complemented with compact fluorescent and some incandescent where original dimming was utilized. The majority of fluorescent fixtures have been upgraded to T8 lamps and ballasts. Exterior lighting consists of building mounted HID wallpacks, a few of which have been replaced with LED fixtures.

Code-required egress lighting - consisting of wall-mounted unit equipment (aka "bugeyes") with integral batteries - is very limited and does not appear to be adequate to meet code requirements. Exit lights are LED, but do not contain integral batteries required by code.

Existing lighting controls are generally pretty basic, utilizing relays and contactors for control of banks of lights. Very limited occupancy sensing controls have been added over the years.

Fire Alarm System

The existing campus fire alarm system is a Simplex system, with individual building headend panels reporting back to the campus headend in Building 900.

Building 800 has a Simplex 4020 series fire alarm control panel that appears to be in fair condition, with no alarms or trouble signals present on the system. Fire alarm field devices consist of manual pull stations at the building exits, very limited smoke detection and limited horn/strobe coverage. Devices appear to be original. The current installation does not meet ADA requirements for visual notification and accessibility to manual pull stations.

Building 2200 has limited fire alarm system provisions. Fire alarm field devices consist of limited horn/strobe coverage. Devices appear to be original. The current installation does not meet ADA requirements for visual notification.

Building 2300 has an older Simplex fire alarm control panel. Fire alarm field devices consist of manual pull stations at the building exits, very limited smoke detection and limited horn/strobe coverage. The current installation does not meet ADA requirements for visual notification and accessibility to manual pull stations.

Telecommunications Structured Cabling System

The existing telecommunications structured cabling system for buildings 800, 2200, and 2300 has been installed, expanded, and modified in phases and separate projects over the history of these facilities. The infrastructure has been implemented as retrofit projects in buildings that were not originally designed to house modern technology. As a result the telecommunications spaces, pathways, and cabling have limited ability to be expanded or upgraded. The existing infrastructure is not up to current industry standards and is not adequate to support current technology such as Voice over IP (VoIP) telephony, Power over Ethernet (POE), and streaming video applications. The buildings are connected to the campus optical fiber and copper backbone cabling systems. The existing backbone cabling does not have the capacity or bandwidth to adequately transport the voice, data, and video application required to support the current and long-term academic and administrative programs and meet the objectives of the College. The existing campus telecommunications backbone cabling and pathways for buildings 2000 and 2100 route through building 2300. Therefore work impacting building 2300 will also impact the telecommunications services to buildings 2000 and 2100.

Security Systems

The buildings currently have limited to no intrusion detection, access control, or video surveillance systems to protect the property and the occupants of the building.

Recommendations of Proposed Electrical System Approach for Renovation

General

The existing electrical and telecommunications systems for Buildings 800, 2200 and 2300 are generally 40+ years old and at or near the end of their economic and useful lives. A substantial renovation would trigger code required upgrades to electrical, life safety and energy related electrical systems. In addition, new systems would be required to extend the life of the existing buildings, and align with the anticipated new programmatic requirements. Because of these factors, we anticipate complete electrical and telecommunications system replacement for these buildings.

Power Distribution

New power distribution would be provided for the buildings, including secondary unit substations, main building switchboard, branch panelboards, transformers and related work. Power monitoring systems would be required to meet new energy code and RCW requirements for energy reporting.

Lighting and Lighting Controls

New interior and exterior lighting will be provided utilizing energy-efficient LED sources throughout. Specialty lighting would be provided for specialty areas such as large lecture halls and similar spaces. New emergency and egress lighting will be provided; a central inverter/battery system would be utilized to meet code requirements.

New lighting controls would be provided to meet current energy code requirements and programmatic needs. Controls will include occupancy, vacancy and time of day controls as well as automatic daylighting harvesting systems.

Fire Alarm

A new fire alarm system will be required for each building, networked to the Simplex campus fire alarm system. The system will require new automatic detection, manual pull stations, sprinkler system monitoring and audible/visual notification devices in accordance with code and ADA requirements

Telecommunications

The new telecommunications distribution system would be a structured cabling system to support the transport of voice, video, and data applications. The system would consist of Category 6A unshielded twisted-pair copper horizontal cabling to work stations and other network attached devices. The new distribution system would include new horizontal cabling to Owner-Provided wireless access points distributed throughout each of the buildings to support wireless devices and portable network equipment. The new cabling would be installed above accessible ceilings using open cabling methods or in cable tray. The cabling will be installed in conduit pathways in locations without accessible ceilings or where the space is open to structure. Each building would have a new telecommunications room to provide a dedicated

and secure space to administer the cabling and network equipment. The space would be equipped with equipment racks, plywood backboards and cable tray to support the installation and maintenance of the telecommunications infrastructure. The new telecommunications room would also include new power, cooling and grounding and bonding systems to properly operate and maintain the network equipment and infrastructure.

The scope of the project would include new underground campus pathways to support the installation of inter-building backbone cabling to connect each building to the existing server room located in Building 4000, fiber hub in Building 5000, and the existing campus telephone system in Building 1000. Pathways will include underground conduits and in-ground utility vaults.

Audio Visual

Audio Visual (AV) systems will distribute audio and video signaling within classroom, conference room, and other collaborative spaces requiring AV capability. The AV systems will typically include AV input plates, speakers, amplifier, video switcher, control panel, mounting hardware, video projector or flat panel display, and wireless microphone system, and cabling.

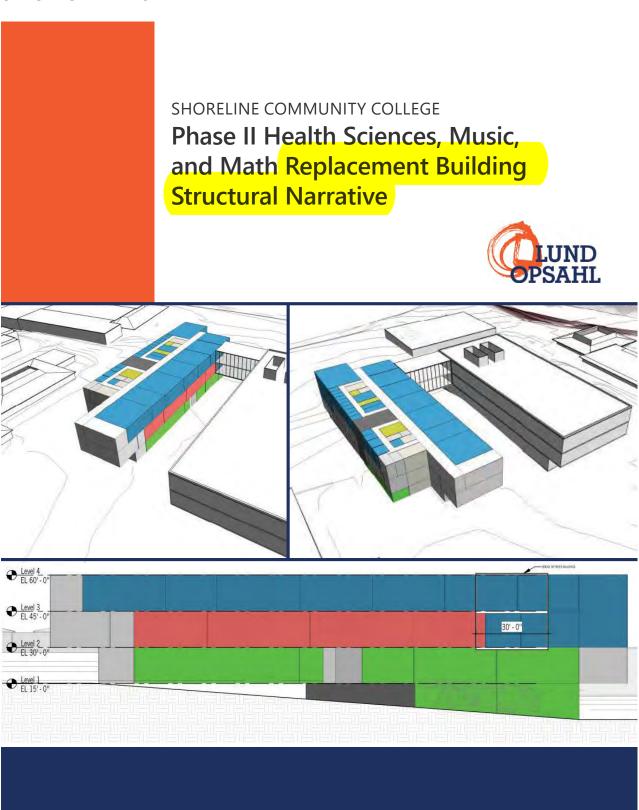
Security

The renovated building will be equipped with electronic security systems including intrusion detection, access control, and video surveillance to protect the property and the occupants of the building.



DESIGN TEAM ENGINEERING - BASIS OF DESIGN

STRUCTURAL ENGINEER





SHORELINE COMMUNITY COLLEGE PRR STRUCTURAL NARRATIVE

SUMMARY

Structural systems for the new, replacement structure will be provided to meet the criteria outlined in this report and be coordinated with the architecture and other building systems.

BASIC SYSTEM

Two options are considered to meet the proposed architectural programming and massing for the Phase II Health Science, Music and Math replacement building: concrete framed and steel framed. Assumptions for each option is summarized below to provide preliminary pricing.

1. CONCRETE FRAMED

The primary structure chosen for this option is a concrete post-tensioned slab floor system supported on concrete columns and wide-shallow beams where needed for column location flexibility. The slabs are on average 9-inch thick with the beams an additional 9 inches deep. The longer span bays may have thicker slabs to reduce potential for adverse deflections.

This option will have concrete shear walls located around the elevator and stair cores, to resist wind and earthquake forces. These walls are relatively short and will require heavy reinforcing to meet seismic design detailing requirements. Wall thicknesses on the order of 16" and column dimensions of 18" x 18" are anticipated and a partial daylight basement at the North end of the building will consist of 10" concrete basement walls with pilasters at exterior column locations.

Foundations consist of large mats at the core walls, spread footings at interior columns and strip footings around the perimeter basement walls. An assumed bearing pressure of 4,000 PSF will be confirmed with a site specific geotechnical report for both framing options.

2. STEEL FRAMED

The primary structure chosen for this option is a concrete slab on metal deck composite floor system supported by steel wide flange beams with headed studs. Longer span beams will be cambered to save weight and headed studs will be welded in the field to accommodate multi-span metal deck. Typical floors will be 4-1/2" on W3 deck (7-1/2" total thickness) for vibration considerations. Typical beam depths of 18" and girder depths of 33" are anticipated. Routing of ductwork through beam webs may be acceptable given their size and location.

This option can either use the same concrete shear walls noted in the previous option otherwise we anticipate buckling restrained braced frames (BRBF) to resist wind and earthquake forces. Two BRBF's are anticipated on the East and West perimeter walls to resist North-South direction shaking and four internal frames are anticipated between classrooms and offices to resist shaking in the East-West direction. Brace sizes will likely be on the order of 12" square with bolted connections to the column gusset plates.

Foundations consist of grade beams at BRBF locations, spread footings at interior columns and spread footings around the perimeter basement walls. Assumptions on the allowable bearing pressure of 4,000 psf will be confirmed by a the geotechnical engineer.

SHORELINE COMMUNITY COLLEGE PRR STRUCTURAL NARRATIVE

Constraints

- 1. The selection of the individual members of the structural system shall consider the overall structure depth of each floor level and the effect on ceiling cavity and other systems.
- 2. The lateral force-resisting system is located to have the least interference with the openness of the floor plate. The walls around elevator lobbies, stairs and utility rooms will require openings for doors as well as penetrations for distribution systems.

CODES, REGULATIONS AND STANDARDS

- 2015 International Building Code (2015 IBC)
- ASCE 7-10 Minimum Design Loads for Buildings and Other Structures
- ACI 318-14 Building Code Requirements for Structural Concrete
- AISC 360-10 Steel Construction Manual, Fourteenth Edition

LOADINGS

Live Loads

Live Load	Min per ASCE 7 (psf)	Design for this project (psf)	Concentrated (lbs) ⁴
Level 1	100	100	2000
Within 15' of Core on Upper Floors	50 ³	100	2000
Corridors above Level 1	80	80	2000
Offices	50 ³	80	2000
Roof (snow)	25	25	Fall protection
			anchors
Loading Dock	250	250	8000 on 20 in ²
Sidewalk with Fire truck accessibility	250	250	40,000 at outrigger
Storage – light & mechanical rooms	125 NR	125 NR	2000

NR: Not reducible

- 1. No live load reduction for beams, 20% max for columns
- 2. No live load reduction is used on beams because of future flexibility and vibration considerations. Columns have LL reduction limited as noted below.
- 3. Partition live load of 15 psf for all offices or other buildings where partition locations may be subject to change unless live load exceeds 80 psf.
- 4. Concentrated loads are distributed over an area of 2.5 ft x 2.5ft.

Live Load Reduction:

- ASCE 7-05 Sect 4.8: when $K_{LL}A_T > 400 \text{ ft}^2$
- A_T = tributary area, K_{LL} = element factor per Table 4-2
- L = $L_o(0.25 + 15/ \text{ sqrt}(K_{LL}A_T)$, but not less than $0.5L_o$ for members supporting 1 floor and not less than $0.4L_o$ for other members.
- Live loads over 100 psf may not be reduced except for members supporting two or more floors may be reduced by maximum 20%. Same for passenger car garages.

SHORELINE COMMUNITY COLLEGE PRR STRUCTURAL NARRATIVE

Wind Design Criteria

All components on the exterior of the building must resist wind forces. These forces often control the design of window glass, enclosure systems, canopies, sunshades, roofing and mechanical screens. The main structural system will be checked for wind force resistance. In the Shoreline area seismic forces usually control the design of the lateral force-resisting systems of low and mid-rise buildings and wind forces are not expected to control the structural system on this building.

Basic wind speed: 115 mph (Category III)

Exposure

included in Wind Speed Importance Factor:

+0.18 and -0.18 Internal Pressure Coefficient:

No topographical influence assumed

Wind on Cladding and Windows load maps to be provided

Seismic Design Criteria

The first issue in establishing seismic design requirements per the building code is to determine the classification of the building for Importance Factors for seismic, wind and snow. The Categories for purpose of determining Importance Factors for the structural design are not the same as the Occupancy Classifications in IBC Chapter 3. This is because the requirements in Chapter 3 are specific to the life-safety issues of each occupancy group (e.g. fire and exiting). The structural Occupancy Categories are established to assign levels of risk of structural damage relative to the need for the building after a catastrophic event, or the risk based upon the number of people in the facility and the ability to evacuate the building, if needed, in a timely manner.

This building will be designed as Structural Category III. For this category the building code requires the following:

1. Structure designed for a Seismic Importance Factor of 1.25 and a Snow Importance Factor of 1.10.

2. Seismic Design Criteria:

Site Class: D; $F_a = 1.0$; $F_v = 1.509$

Seismic Design Category: D

Structural System:

Building Frame System;

Option 1: Special Reinforced Concrete Shear Wall R = 5, $\Omega_0 = 2.5$, $C_d = 5$, Option 2: Steel Buckling Restrained Braced Frames R = 8, $\Omega_0 = 2.5$, $C_d = 5$,

Site coefficients: $S_s = 1.256$; $S_{DS} = 0.837$

 $S_1 = 0.491$; $S_{D1} = 0.494$

Seismic Base Shear Coefficient;

Option 1: $C_s = 0.209g$ Option 2: $C_s = 0.131q$

- 3. Life-safety components required to function after an earthquake and components containing hazardous contents will be designed for an Importance Factor of 1.5. (ASCE 7-10 Section 13.1.3) These
 - Fire protection sprinkler system

SHORELINE COMMUNITY COLLEGE PRR STRUCTURAL NARRATIVE

- Egress stairway framing
- Stairway pressurization fans (if used)
- Egress lighting and exit signage
- 4. The following non-structural components shall be designed and constructed to resist seismic forces with an importance factor of 1.0:
 - Mechanical and electrical components that are mounted 4 ft or less above the floor and weigh more than 400 lb.
 - Mechanical and electrical components, weighing more than 20 lb mounted above 4 ft from the floor
 - Distribution systems weighing more than 5 lb/ft.
 - Suspended ceilings & access floors
 - Exterior enclosure systems
 - Canopies
 - Interior non-structural partitions

Special Inspections for Seismic Resistance per IBC 1707 and testing per 1708. This includes structural inspections and inspections of erection and fastening of exterior enclosure, mechanical, electrical and piping installation.

BUILDING ISSUES

Excavation of site

Ground water is not expected to be a problem and conventional sump pumping techniques are recommended for dewatering the excavation if needed. Drainage behind basement walls is needed to relieve water pressure that may occur from ground water or irrigation.

Floor Vibrations

The perceptibility of vibrations of floor systems is often a concern for selection of a structural system. Vibrations are not an indication of a strength problem within a structure but can be uncomfortable to people using the facility. Vibrations may also be a concern for rooms utilizing vibration-sensitive equipment. The design of this facility will consider perceptibility by occupants. Sensitive equipment is not expected in this building and not included in the design criteria.

Vibrations of floor systems that are perceptible to humans are most often induced by someone walking nearby. All of the floor framing shall be checked for vibrations and they will be limited to levels that are considered acceptable to human perceptibility. The acceptable levels, measured by accelerations, are different depending on the activities in the areas. The general criteria for the floors in this building is an acceleration limit of 0.5% gravity. The analysis is dependent upon the configuration and sizes of the framing along with the type of finishes within the space. The factors used to represent finishes are subjective numbers that make the calculation of vibration perceptibility an approximation. Reasonable values will be used for evaluating these approximations but sometimes conditions change if the area is redesigned or remodeled and perception of vibrations may change too.

Transmission of mechanical equipment noise and vibration will be considered based on recommendations of the acoustical consultant in conjunction with the mechanical engineer.

SHORELINE COMMUNITY COLLEGE PRR STRUCTURAL NARRATIVE

TABLE 1

Recommended Acceleration Limit for Occupancies (expressed as % of gravity)		
Published Occupancy	Acceleration Limit	Areas in Phase 2 Program
Offices, Residences, Churches	0.5%	Lobbies, Classroom, Office
Shopping Malls	1.5%	
Footbridges – Indoor	1.5%	
Footbridges – Outdoor	5%	

(from American Institute of Steel Construction Design Guide 11 – Floor Vibrations Due to Human Activity)

MATERIAL STRENGTH

Concrete

•	Foundation	f 'c = 4,000 psi
•	Interior SOG	f 'c = 4,000 psi
•	Cast-in-place Walls	f 'c = 5,000 psi
•	Floor framing (PT Option)	f 'c = 6,000 psi @ 56 days
•	Columns (PT Option)	f 'c = 5,000 psi
•	Precast Panels (if applicable)	f 'c = 5,000 psi

Concrete Reinforcing

•	Post-tensioning tendons	ASTM A416 270 ksi, ½"dia
•	Reinforcing Steel	ASTM A615, Fy = 60 ksi
•	WWF	ASTM A185

Structural Steel

•	Rolled Sections	ASTM A-992, Fy = 50 ksi
•	Plates	ASTM A-36, Fy = 36 ksi
•	Square & Rectangular HSS Sections	ASTM A-500, Fy = 46 ksi
•	Round HSS Sections	ASTM A-500, Fy = 42 ksi
•	Steel Pipes	ASTM A-53, Fy = 35 ksi

Foundations

• Bearing Pressure 4,000 psf assumed



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Client: Schacht/Aslani Architects	Sheet: <u>1 of 4</u>
Project: Shoreline Community College	Design by: DCY
Health Science & Music Building PRR	Date: 10/22/2017
<u>Drainage & Utility Narratives – New Building</u> by: DCY	Checked
Project No. 212017 017 000	

The following is the civil utilities section to be included in the overall project report.

Assumption: This drainage and utility narrative is based on the assumption that the Health Science Building & Manufacturing project will be constructed before the Health Science & Music Building project. If this assumption is not valid, this drainage and utility narrative document will need to be revised.

SANITARY SEWER SYSTEM

Existing System

The college campus sewer system is owned and operated by Shoreline Community College. The sewer service purveyor is Ronald Wastewater District. Public sewer service to the campus is provided at the intersection of Carlyle Hall Road NW and Greenwood Avenue NW, where the college system connects to the public system.

Sanitary sewage from Building 1900 is collected into a sewer main running west to east between Buildings 2200 and 2300. This 8-inch sewer main turns north outside the northwest corner of Building 2200 and runs to a manhole outside the southwest corner of Building 2500, collecting sewage from Buildings 2200 and 2300. At the sewer manhole, the sewer main turns east and runs between Buildings 2500 and 2600 to a 10-inch sewer main under the east campus circulation road. The 10-inch sewer main runs from northwest to southeast and connects to the sewer manhole in the parking lot east of Building 5000. From the parking lot, a sewer main conveys the sewage to the existing public sewer main at the intersection of Carlyle Hall Road NW and Greenwood Avenue NW.

Proposed Improvements

The existing 8-inch sewer main running between Building 2500 and Building 2600 will be replaced and relocated further north to avoid the proposed Health Science Building's footprint. This sewer main relocation will be completed with the Health Science Building & Manufacturing project and will therefore be "existing" when the Health Science & Music Building is constructed.

Since the proposed Health Science & Music Building will be placed at the location of Buildings 2200 and 2300, the existing sewer main running between these two buildings and servicing Building 1900 will need to be rerouted. To avoid the proposed building footprint, the relocated sewer main will collect sewage from Building 1900 and likely run outside the south wall of the proposed building. The new sewer main will then turn north, run to the north end of the proposed building, and connect to the sewer main constructed with the Health Science & Manufacturing project. Sanitary sewer service to the proposed building will be provided to this new sewer main through a gravity side sewer. The rerouted sewer main will likely be 8 inches in diameter.

WATER SYSTEM

Existing System

The North City Water District provides water for Shoreline Community College. Water is provided to the college campus from a 12-inch public water main along Carlyle Hall Road North. A 12-inch-diameter main enters the campus through a master meter at the intersection of Carlyle Hall Road North and Greenwood Avenue North. Shoreline Community College owns and operates the water system downstream of the master meter.

Downstream of the master meter, a 12-inch ductile iron (DI) water main runs southwest through a pump station that provides a pressure boost for the system. The water main then runs uphill to the main campus, near Building 3000. The 12-inch DI main branches out and loops the campus along the main circulation road.

An 8-inch water main wraps around Building 2300 on its west and north sides. At the northwest corner of Building 2300, the existing 8-inch water main branches to the north and west. To the north, the water main connects to the 12-inch DI main under the campus circulation road, outside Building 2100, through an 8-inch DI main. To the west, the water main will connect to an 8-inch DI water main to be constructed with the Health Science Building & Manufacturing project. The 8-inch DI main to be constructed with the Health Science Building & Manufacturing project will run in a south-north direction and connect to the 12-inch water main under the campus main circulation road on the north and the 8-inch water main outside Building 4000 on the south. Water services for the domestic and building sprinkler systems are provided by the 8-inch water main on the north side.

An existing fire hydrant is located approximately 60 feet outside the northeast corner of Building 2300. The Health Science Building & Manufacturing project will install one fire hydrant outside the new building's northwest corner, which is on the northeast side of the Health Science & Music Building.

Static water pressure at the campus varies considerably due to campus topography. The North City Water District system is able to deliver a large flow to the master meter and pump station. The existing pump station was designed to deliver 3,200 GPM water flow at 65 psi to the highest point on the campus, which should be adequate for the proposed Health Science & Music Building.

Proposed Improvements

New domestic water service and water for the building fire sprinkler service are required for the proposed Health Science & Music Building. These services can be connected to one of the water mains nearby. Depending on the final building location, the existing water main on the north side of Building 2300 may be in conflict with the proposed building footprint. If it is in conflict, this existing 8-inch main could be eliminated. No relocation is necessary.

A backflow preventer and a post indicator valve are required on the fire sprinkler service line. In addition, a new fire department connection is required. Two new fire hydrants, one each outside the southwest and northeast corners of the proposed building, will likely be required. The turnaround circle of Building 2100 and the fire lane to be constructed with the Health Science Building & Manufacturing can be used for fire truck access.

NATURAL GAS

Existing System

The natural gas system at the college campus is owned and operated by Puget Sound Energy (PSE). The campus gas pipe system originates from a 4-inch gas main at the intersection of Carlyle Hall Road NW and Greenwood Avenue NW. The 4-inch gas line runs southwest, continues up the hill to the main college campus, and extends to the southeast of Building 1500. At this location, the gas main branches into two 2-inch lines, running in the south and north directions.

The north branch runs through the areas between Buildings 2200 and 2700 and Buildings 2300 and 2500 and provides gas services to buildings on the northern part of the campus. Each building served is equipped with an individual gas meter.

Proposed Improvements

Natural gas service is available for the proposed Health Science & Music Building. If gas service is needed, it could be provided by the nearby existing gas main to the building. A new regulator and a meter are likely required.

STORM DRAINAGE SYSTEM

Existing System

Shoreline Community College owns and operates storm drainage systems inside the college campus. The majority of the college campus drains to Boeing Creek. Storm runoff from the area of Buildings 2200 and 2300 is collected into underground pipe systems. The collected water is conveyed east, first by a 12-inch and then by an 18-inch storm main, to the northeast corner of Building 2900. The 18-inch storm main turns south and connects to a manhole east of Building 5000. From the manhole, water flows northeast through an 18-inch pipe and discharges to Boeing Creek.

Buildings 2200 and 2300 were constructed before stormwater management was required. There are no existing detention and water quality facilities in these areas.

Proposed Improvements

Storm runoff from the proposed project site (Buildings 2200 and 2300) is currently collected into an underground pipe system and discharged to Boeing Creek through a storm main under the walking path connecting the Greenwood Parking Lot to the main campus. For the proposed development, storm runoff from the project area will be switched to a different drainage basin. The new basin discharges to Boeing Creek through an existing storm main running down the steep hill from the east side of the Athletic Field. The College Campus Drainage Master Plan outlines these drainage basin adjustments.

Storm runoff from the project area will be collected into an underground pipe system through yard drains and catch basins. Runoff from building roof areas will also be collected to the underground pipe system through roof drain systems. The underground pipe system will convey water north and connect to the 12-inch existing storm main under the campus circulation road. This existing storm main connects to the existing 18-inch pipe that runs downhill to the Greenwood Parking Lot area and Boeing Creek. A section of the 12-inch existing storm main, downstream of the connection point, will likely need to be upsized to 18 inches to accommodate the increased storm flows from the proposed project site and the drainage basin limit adjustment.

The Building 1900 area currently drains to a storm main running between Buildings 2200 and 2300. If the proposed building is constructed in the area of Buildings 2200 and 2300, this existing storm main will needed to be rerouted for continual service to Building 1900. The rerouted storm main will connect to the drain pipe system that serves the proposed building. With this rerouting, Building 1900 will also switch to a different drainage basin, as outlined in the College Campus Drainage Master Plan.

Stormwater flow control (detention) will be provided by enlarging the detention and infiltration facility built with the Health Science Building & Manufacturing project in the Greenwood Parking Lot. The flow splitter in the Greenwood Parking Lot will be modified to regulate and proportion more flows coming down the hill from the northern part of the college campus to the detention and infiltration pond. The rest of the storm flows will by-pass the pond and discharge to Boeing Creek. The outlet flow restrictor of the pond will be modified accordingly to accommodate more flows from the proposed project area.

Water quality treatment facilities will be installed on the project site to treat storm runoff from pollutant-generating impervious areas if these areas exceed the code requirement threshold. The treated water will drain to the underground pipe system that conveys water downhill to the detention and infiltration pond in the Greenwood Parking Lot. Enhanced treatment for stormwater quality treatment is required by city code.

Low Impact Design (LID) is required by city code. The LID measures could be bioretention cells or permeable pavement, depending on the final size layout and soil conditions. The infiltration pond in the Greenwood Parking Lot is also a LID element.

MECHANICAL NARRATIVE – REPLACEMENT ALTERNATIVE

Information Resource

- A. Field investigation performed September 5th, 2017
- B. Various existing drawings of the facility from SCC

General Overview

The existing Music Building (building 800) at Shoreline Community College is a late 70's vintage building with various program spaces including classrooms, sound studio rooms, instrument storage, professor offices and a large choral and instrumental teaching spaces. All of these spaces are located on the "upper floor" as the building was built up above grade with some general support spaces below for domestic water, fire and electrical gear. An addition was added on later directly below the upper floor. These spaces included additional classrooms, offices, storage and other spaces. There is no elevator between these levels. Plumbing fixtures are all original and do not meet ADA or water conservation requirements. In general, the overall mechanical systems appear to be in fair to poor condition serving the upper floor. At 40+ years old, many of the mechanical systems are at or near the end of their economic and useful life. The lower floor added on is utilizing a more recent variable refrigerant flow (VRF) type system, however, ventilation air was not added to this lower level space.

The existing Health Science classroom building (building 2200) is a late 50's / early 60's vintage building with nine classroom spaces that open to the exterior of the building. There are not any offices within this facility or corridor/ancillary type spaces. There are not any restrooms serving this facility. The HVAC system does not have cooling provided to this building. The heating comes from a small central plant from building 2400. The central plant in building 2400 has a boiler that is 50+ years old that is still running and another boiler that has been removed from service due to failure. A third boiler was added at a smaller capacity to fit in the available space as a temporary solution. There is no sprinkler service for this building.

The existing Health Science large lecture hall building (building 2300) is an early 70's vintage building with a large lecture hall, two classrooms, workroom, conference rooms, 18 offices and support spaces on the main floor. The basement level was originally configured for storage and mechanical space/electrical space. A portion of the floor was reconfigured into two classroom type spaces. Stairs are required to get into these classrooms. No elevator exists for these rooms. Fire sprinklers exist on the main floor, but not at the floor below. Plumbing fixtures are all original and do not meet current ADA or water conservation requirements. In general, the overall mechanical systems appear to be in fair to poor condition serving the upper floor. The lower floor stole capacity from the existing system to serve the lower floor classrooms added. Ventilation capacity is below health code levels as a result. The building has its own boiler plant. No cooling was available for this building. At 45+ years old, many of the mechanical systems are at or near the end of their economic and useful life.

Description of the Existing Mechanical Systems and Assessment Music Building (Building 800)

<u>Life Safety / Fire Protection system</u>

 Fire Sprinklers: The fire sprinkler system for this building serves both the upper and lower floor of the building. The heads are not quick response type meeting current code requirements. Some storage areas do not meet the spacing requirements.

Plumbing Systems

- 1. Piping: The domestic water system is primarily galvanized and copper with some spot repairs and minimal ADA upgrades completed. The waste and vent system could not be viewed as part of this site study with the exception of some vent lines replaced with ABS as part of repair work. The system is original.
- Domestic Water Heating: The domestic water heating system has been replaced at least once over the course of the buildings life. The current water heaters are both beyond its service life and in need of replacement.
- 3. Plumbing Fixtures: The plumbing fixtures are a mix of original on the upper floor and conservation saving fixtures on the lower floor. Full ADA restrooms were added to the restrooms at the lower level when built out. The original water closets use 3.6 Gals/flush and urinals use 1.6 gals/flush wasting significant water and not meeting current environmental standards. The drinking fountains do not meet ADA requirements.

HVAC System

1. Supply/Ventilation Air and HVAC Equipment Upper Floor: The supply air is provided from built-up PACE HVAC equipment located within the attic space between the large volume classroom spaces. The large classroom spaces have dedicated HVAC units while the smaller studios utilize constant heat and vent with poor man pneumatic motorized damper control at each of the sound studios and classrooms. Large louvers are spread throughout the building to support the spaces. Cooling units were added to each of the units through remote DX equipment located on grade outside of the building. All of the support and return ductwork is connected without the use of plenums. It could not be determined if full outside air economizer was configured for these units. Based on the size of the return ductwork, it is not likely that the HVAC units are set up for economizer as they vary in size from the supply ductwork. All of the HVAC equipment is from the original construction. The ventilation air requirement was before the sick

building syndrome in the 80's and is likely not providing enough ventilation air to meet current health code standards.

<u>Supply/Ventilation Air and HVAC Equipment Lower Floor:</u> The supply air is provided from Mitsubishi VRF units at each space through centralized units. No ventilation ductwork could be confirmed at each unit. The heating and cooling is through two remote Mitsubishi Multicity VRF heat pump units that provide both heating and cooling. It is estimated that this system is 4-8 years old. Ventilation air requirement does not meet current health code standards.

- 2. <u>Exhaust Air:</u> The building has exhaust provided at the restroom spaces. Exhaust is not provided at the heavy copy areas not meeting current health code requirements.
- 3. <u>Central Plant</u>: There is no existing central plant for this building. Heating is through electric re-heat coils at the main HVAC units serving various zones. DX coils were added for cooling. No central chilled water is being provided through a central plant.
- 4. <u>Heat Recovery:</u> There is no heat recovery for this building.
- 5. <u>Energy Management Control System:</u> The control system within the building is a partially original pneumatic system with some upgrades to an energy management system. Some of the main air handlers have been upgraded to an energy management system as systems have failed. There is no scheduling at the thermostats or setback controls. The current system does not meet the current energy code.

Mechanical Code / Health Code / Energy Code

1. The ventilation for the building does not currently meet the requirements for outside air. A demand control ventilation system has not been installed on the main air handlers serving the building. The mechanical system is a constant heating and ventilation system without variable speed drives or the proper energy management system to reset the temperature within the air handlers appropriately. Many of the thermostats and air handler components are still using pneumatic controls that operate 24/7 and are not connected to the energy management system. The mechanical systems and controls installed have not met the energy code for at least the last twenty years.

Description of the Existing Mechanical Systems and Assessment Health Science Classroom Building (Building 2200)

<u>Life Safety / Fire Protection system</u>

1. Fire Sprinklers: fire sprinkler system does not currently exist for this building. Building code has changed for educational facilities greater than 5,000 SF to be sprinkled. The code changed from 10,000 SF to 5,000 SF in 2009.

Plumbing Systems

 There are no fixtures or restrooms as part of this facility. A code review based on distances to restrooms and drinking fountains to other buildings needs to be confirmed that distances have not been exceeded.

HVAC System

- 1. <u>Supply/Ventilation Air and HVAC Equipment:</u> The supply air is provided from HVAC units located within soffited areas within each of the classroom spaces. The outside air comes from the roof and is distributed into the classrooms through sidewall diffusers at the soffits. Return air circulates from the bottom of the soffit. Relief air is through above door louvers. These louvers are completely open to the exterior without any back draft or motorized dampers letting debris and outside air directly into the building. Current code requires motorized dampers at relief louvers. The size off the supply grilles indicated that the ventilation air requirement for the quantity of people and square footage is not being met. Ductwork distribution is limited to the soffits.
- 2. Exhaust Air: The building does not have any exhaust system.
- 3. <u>Central Plant</u>: There is no existing central plant for this building. Heating is through a remote central plant from building 2400. The central plant is older than this building, 2200. One of the boilers has been removed from service due to failure. The second remaining boiler is original and has seen better days and is close to failure. A temporary boiler has been brought to building, but based on the square footage of the room is smaller in capacity than the one that failed. This project can be decoupled from the central plant, however, it is highly recommended to replace the boiler plant as part of this remodel. Chilled water and cooling is not being provided.
- 4. <u>Heat Recovery:</u> There is no heat recovery for this building.
- 5. <u>Energy Management Control System:</u> The control system within the building is an original pneumatic system. There is no scheduling at the thermostats or setback controls. The current system does not meet the current energy code.

Description of the Existing Mechanical Systems and Assessment Health Science Lecture and Classroom Building (Building 2300)

<u>Life Safety / Fire Protection system</u>

1. Fire Sprinklers: The fire sprinkler system for this building serves the upper floor only. The lower floor of the building does not have a fire sprinkler system throughout. The fire sprinkler header is located in the lower level on the North side. The heads are not quick response type meeting current code requirements. The entire building is required to be sprinkled to meet current code and life safety requirements.

Plumbing Systems

- 1. Piping: The domestic water system is primarily galvanized and copper with some spot repairs and minimal ADA upgrades completed. The waste and vent system could not be viewed as part of this site study with the exception of some vent lines replaced with ABS as part of repair work. The system is mostly original. It does appear that some restroom work was done around 15-20 years ago to support adding fixtures for a women's restroom. There are no restrooms or mop sinks at the lower level.
- 2. Domestic Water Heating: The domestic water heating system has been replaced at least once over the course of the buildings life. The current water heater is beyond its service life and in need of replacement.
- 3. Plumbing Fixtures: The plumbing fixtures are a mix of original and some from 15-20 years ago. Original restrooms were modified to try and support ADA requirements. Some fixtures were removed as part of this process. The current configuration does not meet current ADA requirements. The original water closets use 3.6 Gals/flush and urinals use 1.6 gals/flush wasting significant water and not meeting current environmental standards. The drinking fountains do not meet ADA requirements.

HVAC System

1. <u>Supply/Ventilation Air and HVAC Equipment Upper Floor:</u> The supply air is provided from two built-up HVAC units located within the lower level mechanical room. It appears that the large lecture hall is served from one unit that is in the center of the building. The second unit appears to be a constant heat and vent unit that serves all of the perimeter offices and the two classrooms with exterior walls. The offices appear to utilize constant heat and vent with poor man pneumatic motorized damper control at each of the classroom or office with some having reheat coils. Louvers are located in the mechanical room for ventilation air and are sized large enough to support offices

and classrooms from a ventilation standpoint, although should be verified. The lecture hall unit ventilation air requirement is not adequate and needs to be increased. The units do not have any cooling. It could not be determined if full outside air economizer was configured for these units. Based on the size of the return ductwork, it is not likely that the HVAC units are set up for economizer as they vary in size from the supply ductwork. All of the HVAC equipment is from the original construction. The ventilation air requirement was before the sick building syndrome in the 80's and is likely not providing enough ventilation air to meet current health code standards.

- 2. Supply/Ventilation Air and HVAC Equipment Lower Floor: The supply air has been scabbed from the classroom unit for the two added classroom training type classes within the lower level. The ventilation is definitely not adequate. Return air could not be located from these spaces.
- 3. Exhaust Air: The building has exhaust provided at the restroom spaces. Exhaust is not provided at the heavy copy areas not meeting current health code requirements.
- Central Plant: There is an existing hydronic heating central plant for this building 4. located in the mechanical room. Current health code does not allow boiler plants to be in the same room as HVAC units. Concern is related to carbon monoxide poisoning or flue gases getting into the ductwork based on the negative pressure of the room. The heating plant is original with some components no longer functioning. Portions of the plant have been overridden to make the system operational.
- 5. Heat Recovery: There is no heat recovery for this building.
- Energy Management Control System: The control system within the building is the 6. original pneumatic system with some upgrades to an energy management system. Some of the main air handler components (actuators) have been upgraded to an energy management system as systems have failed. There is no scheduling at the thermostats or setback controls. The current system does not meet the current energy code.

Mechanical Code / Health Code / Energy Code

1. The ventilation for the building does not currently meet the requirements for outside air. A demand control ventilation system has not been installed on the main air handlers serving the building. The mechanical system is a constant heating and ventilation system without variable speed drives or the proper energy management system to reset the temperature within the air handlers appropriately. thermostats and air handler components are still using pneumatic controls that operate 24/7 and are not connected to the energy management system. The mechanical systems and controls installed have not met the energy code for at least the last twenty years.

Recommendations of Proposed Mechanical System – New Building Combined building of Music, Health Science, offices and classrooms

<u>Life Safety / Fire Protection System</u>

1. Fire Sprinklers: A new fire sprinkler system is required throughout the facility utilizing quick response heads. The main fire riser is to be located on the ground floor on the North side with fire department access on the North side. A fire hydrant is required to be within 50 feet of the fire department connection. Piping would be distributed throughout. A dry system is likely required based on coverage in the basement mechanical room and crawl spaces that is not anticipated to be heated. The three story and four story building will require stand pipes within the stairwells at all floors.

Plumbing Systems

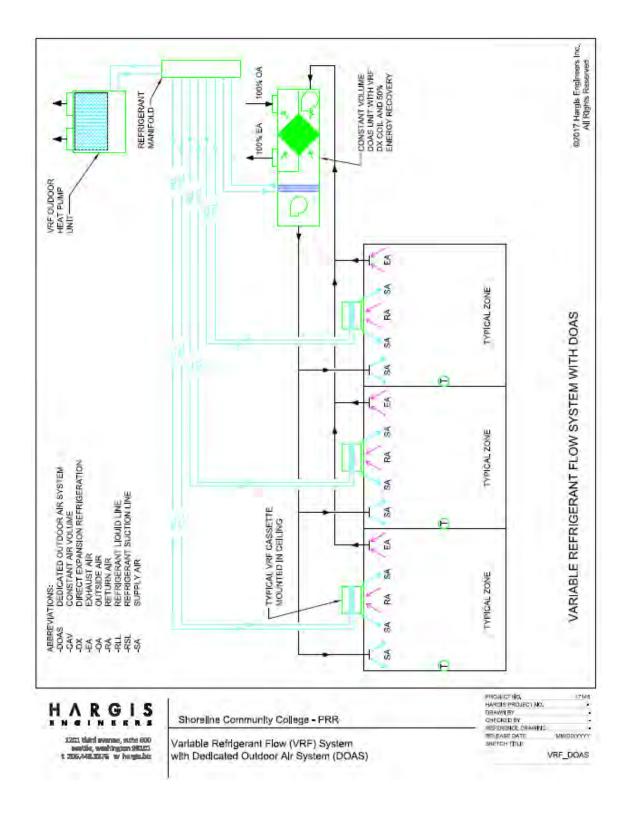
- Piping: The domestic water and sanitary waste/vent systems will be new throughout.
 Copper piping for domestic and cast iron for the waste and vent will be used. The
 domestic hot water system will utilize a gas system with high efficiency hot water
 condensing water heaters. A new backflow system will be provided to protect the
 domestic water system.
- 3. Plumbing Fixtures: The plumbing fixtures will be new throughout including water closets, urinals, lavatories, drinking fountains with bottle fillers, mop sinks and general use sinks as indicated on the architectural plans. Fixtures will also be selected to support the program of the spaces. Fixtures will meet ADA requirements and be water conservation type. All fixtures will be vitreous china, stainless steel or an epoxy style based on the application to provide longevity and reduced maintenance.

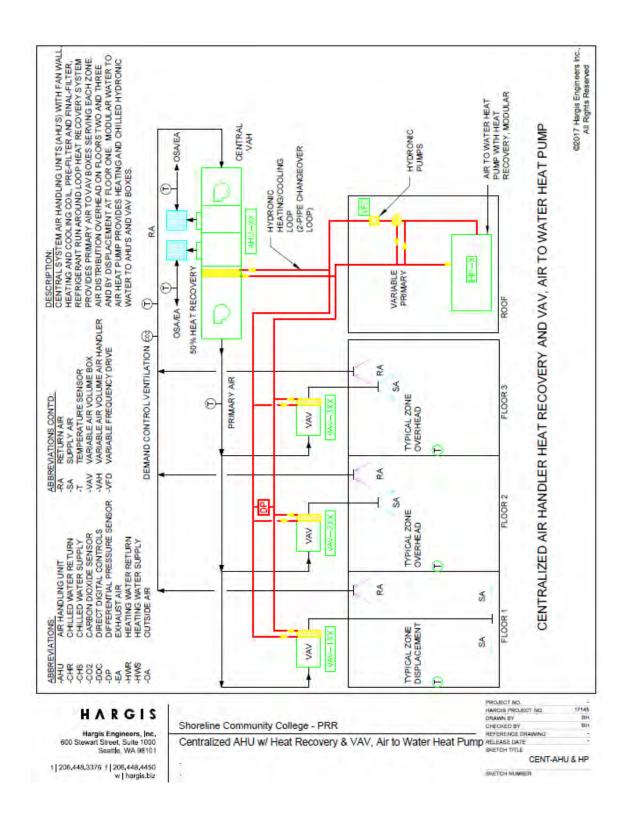
HVAC System

1. <u>Supply/Ventilation Air and HVAC Equipment:</u> Current energy code requires either a high performance VAV system or a dedicated outside air system (DOAS) with either VRF or a passive heating/cooling system. Larger spaces like the skills lab and patient rooms are exempt from these requirements and are recommended to have a dedicated HVAC unit. With the number of offices at all levels and the qty of classrooms, a DOAS system with VRF is the proposed system. This system will provide the most flexibility for all of the spaces. The lab classrooms will have dedicated units or a high performance VAV system to meet the health code and energy code requirements. The high performance VAV would serve the classrooms and skills lab on the 1st floor. VRF would serve the offices on the 1st floor and the 2nd and 3rd floors. Shafts will be provided through all floors to support the program. The DOAS units would be located in the mechanical room at the lower level mechanical room and roof with ventilation ductwork routed to

each VRF HVAC unit for each zone. Return ductwork from each zone will be routed back to the DOAS unit for heat recovery. Remote heat pump VRF units will provide the heating and cooling to each of the VRF HVAC units at each zone. Condensate lines from each unit will be pumped back to an approved discharge location. The VRF HVAC units can be in room type units, ceiling cassette style or a fan coil type unit. Each VRF HVAC unit would have Merv 13 filtration meeting LEED requirements. The DOAS unit will also have an air filtration system and will be provided with both a 2" pre-filter and a 4" filter meeting MERV 13 requirements or higher. The high performance VAV system would be located at the lower level to serve the health science locations with a heat recovery unit. Hydronic heating and cooling would be required as part of the VAV system. Cooling would be provided at the main air handler only from the VRF system through a refrigerant coil. As an alternate, the coil at the main air handler could provide heating through the VRF unit as well. The VAV boxes would require hydronic heating based on the current energy code.

- 2. Exhaust Air: The exhaust system will be new to support the restrooms and health science program. Where heavy copying is shown on the plans, a dedicated exhaust system will be provide to meet the current health code.
- 3. Central Plant: A small central plant for heating is recommended for this site based on the primary VRF approach and health science program. Cooling and heating would come from the VRF system at the main air handler. The boiler plant is used for the hydronic VAV boxes serving the health sciences zones. The HVAC equipment would be required to be separated from the central plant. The system would be new with pumps utilizing low temperature hydronic hot water.
- Heat Recovery: Heat recovery will be provided through a flat plate heat exchanger with 4. latent energy recovery as part of the DOAS unit or HVAC unit.
- Energy Management Control System: The College utilizes an energy management 5. system (EMS). The entire system will be new and integrated with the heating, cooling and ventilation system. The EMS system will have a connection to the fire alarm, lighting, sub-meters and security systems.





ELECTRICAL NARRATIVE – REPLACEMENT ALTERNATIVE

Information Resource

- A. Field investigation performed September 5th, 2017
- B. Various existing drawings of the facility from Shoreline Community College

General Overview

The existing Music Building (Building 800) at Shoreline Community College is a late 70's vintage building with various program spaces including classrooms, sound studio rooms, instrument storage, professor offices and a large choral and instrumental teaching space. All of these spaces are located on the "upper floor" as the building was built up above grade with some general support spaces below for electrical systems, domestic water and fire. An addition was added on later directly below the upper floor. These spaces included additional classrooms, offices, storage and other spaces. There is no elevator between these levels.

The existing Health Science Classroom Building (Building 2200) is a late 60's vintage building with nine classroom spaces that open to the exterior of the building. There are not any offices within this facility or corridor/ancillary type spaces. There are not any restrooms serving this facility.

The existing Nursing Education Building (Building 2300) is an early 70's vintage building with a large lecture hall, two classrooms, workroom, conference rooms, faculty offices and support spaces on the main floor. The basement level was originally configured for storage and mechanical and electrical rooms; a portion of the floor was reconfigured into two classroom/nursing lab type spaces. Stairs are required to get into these lower level classrooms. No elevator exists.

Description of the Existing Electrical Systems

In general, the overall electrical systems for these buildings appear to be in fair condition but at 40+ years old, are at or near the end of their economic and useful life. Selective remodels were completed in Buildings 800 and 2300, but core electrical systems are predominantly original.

Power Distribution

Each of the buildings receives power from the Shoreline Community College (customer-owned) underground campus primary power distribution system at 4,160 Volts.

Building 800 is served from campus primary radial feeder "E". A 500kVA, dry-type secondary unit substation is installed in the basement – accessed from grade - providing approximately 28 VA/sf capacity at 480Y/277 Volts which appears to be adequate for the current building program. Branch panelboards are installed within the basement electrical room and throughout the building to serve building loads. Almost all of the power distribution

equipment in Building 800 is original, manufactured by Square D, and is UL listed. Availability of spare parts for this vintage of equipment is limited.

Building 2200 is served from campus primary radial feeder "C", which routes via Buildings 2400 and 2900. A 300kVA, dry-type secondary unit substation is installed below the building, in a sheltered (not enclosed) area. This space is accessed via areaway grate and ladder which is an electrical safety concern. In addition to Building 2200, this unit substation also serves adjacent Building 1800. The systems provides approximately 20 VA/sf capacity at 208Y/120 Volts which appears to be adequate for the current building program. Branch panelboards are installed within the basement electrical room and throughout the building to serve building loads. Almost all of the power distribution equipment in Building 2200 is original, manufactured by Square D, and is UL listed. Availability of spare parts for this vintage of equipment is very limited.

Building 2300 is served from campus primary radial feeder "D", which routes via Buildings 2500 and 50000. A 225kVA, dry-type secondary unit substation is installed within the lower level electrical room within the building, accessed from grade. The primary power system feeds through this building, to a downstream pad-mounted transformer serving Buildings 2000 and 2100. The system provides approximately 13 VA/sf capacity at 480Y/277 Volts which is not adequate for a typical skilled nursing building program. Branch panelboards are installed within the basement electrical room and throughout the building to serve building loads. Almost all of the power distribution equipment in Building 2300 is original, manufactured by Westinghouse, and is UL listed. Availability of spare parts for this vintage of equipment is very limited.

A power monitoring/metering system was not observed at any of the buildings reviewed. An emergency or standby generator or central inverter power system was not present in any of the buildings.

<u>Lighting and Lighting Controls Systems</u>

In each of the buildings, the existing building lighting systems consists primarily of fluorescent sources, complemented with compact fluorescent and some incandescent where original dimming was utilized. The majority of fluorescent fixtures have been upgraded to T8 lamps and ballasts. Exterior lighting consists of building mounted HID wallpacks, a few of which have been replaced with LED fixtures.

Code-required egress lighting - consisting of wall-mounted unit equipment (aka "bugeyes") with integral batteries - is very limited and does not appear to be adequate to meet code requirements. Exit lights are LED, but do not contain integral batteries required by code.

Existing lighting controls are generally pretty basic, utilizing relays and contactors for control of banks of lights. Very limited occupancy sensing controls have been added over the years.

Fire Alarm System

The existing campus fire alarm system is a Simplex system, with individual building headend panels reporting back to the campus headend in Building 900.

Building 800 has a Simplex 4020 series fire alarm control panel that appears to be in fair condition, with no alarms or trouble signals present on the system. Fire alarm field devices consist of manual pull stations at the building exits, very limited smoke detection and limited horn/strobe coverage. Devices appear to be original. The current installation does not meet ADA requirements for visual notification and accessibility to manual pull stations.

Building 2200 has limited fire alarm system provisions. Fire alarm field devices consist of limited horn/strobe coverage. Devices appear to be original. The current installation does not meet ADA requirements for visual notification.

Building 2300 has an older Simplex fire alarm control panel. Fire alarm field devices consist of manual pull stations at the building exits, very limited smoke detection and limited horn/strobe coverage. The current installation does not meet ADA requirements for visual notification and accessibility to manual pull stations.

Telecommunications Structured Cabling System

The existing telecommunications structured cabling system for buildings 800, 2200, and 2300 has been installed, expanded, and modified in phases and separate projects over the history of these facilities. The infrastructure has been implemented as retrofit projects in buildings that were not originally designed to house modern technology. As a result the telecommunications spaces, pathways, and cabling have limited ability to be expanded or upgraded. The existing infrastructure is not up to current industry standards and is not adequate to support current technology such as Voice over IP (VoIP) telephony, Power over Ethernet (POE), and streaming video applications. The buildings are connected to the campus optical fiber and copper backbone cabling systems. The existing backbone cabling does not have the capacity or bandwidth to adequately transport the voice, data, and video application required to support the current and long-term academic and administrative programs and meet the objectives of the College. The existing campus telecommunications backbone cabling and pathways for buildings 2000 and 2100 route through building 2300. Therefore work impacting building 2300 will also impact the telecommunications services to buildings 2000 and 2100.

Security Systems

The buildings currently have limited to no intrusion detection, access control, or video surveillance systems to protect the property and the occupants of the building.

Recommendations for Proposed Electrical Systems New Building

Site Utilities

Power

To meet the needs of the proposed facility, the campus 4,160 Volt, 3-phase primary power system will require some fairly significant upgrades. We anticipate that these upgrades will be completed prior to this project, either as a separate infrastructure project or integrated with the proposed Allied Health building project that is being considered. For this project, we assume a more traditional scope of work for campus power utilities, including modifications and extension of existing facilities to the proposed new building.

Recent utility records indicate a 12-month peak power demand of 1,548 kVA for Shoreline Community College. Including 125% multiplier required by the National Electrical Code, the existing campus electrical does not currently have the capacity to accommodate the proposed Health Sciences and Music Building without upgrades. Preliminary electrical load calculations:

Existing Campus Calculated Load: 1,548 kVA Peak * 125% = 1,935 kVAAnticipated HSB Bldg Calculated Load: 55,000 sf * 24 VA/sf = 1,320 kVAAnticipated Manufacturing Bldg Calculated Load: 15,000 sf * 20 VA/sf = 300 kVA Anticipated Health Sciences & Music Building: 49,961 sf * 20 VA/sf = 999 kVA **Total Campus Calculated Load** = 4,554 kVA

Amps at 4,160 Volts, 3 Phase = 632 Amps Existing Shoreline Community College Service Size: 400 Amps @ 4,160 V, 3-phase

Modifications to the existing campus primary power system will be required to accommodate demolition of existing Buildings 800, 2200, 2300, and the electrical systems contained within. Building 1800 - currently served from Building 2200 -will require a new secondary feeder. The pad-mount transformer serving buildings 2000 and 2100 - currently fed through Building 2300 - will require a new primary power feeder.

Removal of Building 800, and the associated primary power system, will occur after the completion of the Health Sciences & Music Building.

Telecommunications

The Health Sciences and Music Building will require new underground campus pathways to support the installation of inter-building backbone cabling to connect the building to the existing server room located in Building 4000, fiber hub in Building 5000, and the existing campus telephone system in Building 1000. Pathways will include underground conduits and in-ground utility vaults.

The scope of the project also includes the demolition of the existing buildings Buildings 800, 2200, 2300. Some of these building include facilities and pathways that provide telephone and network connections to other buildings not affected by this project. Therefore additional site pathways and inter-building cabling will be required to establish new campus-wide connections for the existing buildings that will remain after the completion of this project.

Campus network connections could be accomplished by establishing a new fiber hub in the Health Sciences and Music building to provide fiber connectivity. The new fiber hub will also serve the other buildings on the north end of the campus that will remain and will lose their fiber connectivity when buildings 2200 and 2300 are demolished.

The existing telephone backbone cable from Building 1000 could be intercepted and an underground vault installed. The vault will serve as a splice point with new telephone cabling installed from the existing-to-remain buildings on the north end of the campus to the vault and spliced onto the existing cable. This option will use the existing cabling and pathway from Building 1000 and minimize construction costs and disruptions to the College's operations.

Building Electrical Systems

The Health Sciences and Music building will require electrical systems that are flexible and robust to meet the specific program requirements in this facility. Application of energy efficient, low-maintenance systems will be a priority. Systems will be provided in accordance with current codes, including the International Building Code, International Fire Code, Washington State Energy Code and National Electrical Code, all as amended by the State of Washington and City of Shoreline.

Power Distribution

The Health Sciences and Music building will be fed from the primary-metered campus power distribution system, currently at 4,160 Volts, 3-phase. The building power distribution voltage will be 480/277 Volts wye, 3 phase, 4 wire with a preliminary size of 1000 kVA with a 1600 Amp main switchboard, providing over 20 VA/ square foot of capacity. This includes provisions for building lighting, mechanical and miscellaneous power loads as well as an allowance for medical and industrial equipment and lab loads. A minimum of 20% spare capacity and circuit breaker provisions will be provided in all switchboards and panelboards to allow for future growth and flexibility.

A secondary unit substation with primary load interrupter switch, transformer and secondary switchboard will be provided indoors for building power. The switchboard main will be a fixed-mounted insulated case circuit breaker. Fixed-mounted molded case circuit breakers will be utilized elsewhere for overcurrent protection. Panelboards will have bolt-on circuit breakers. Copper bus will be provided. Equipment will be fully rated for the available fault current; series-rated devices will not be utilized.

To enhance power quality and facilitate tracking of energy consumption, the electrical distribution system will be segregated by load type as much as practical. Separate panelboards for lighting, mechanical equipment, equipment power and classroom power will be provided. Large electrical loads and motors sized at 3/4 HP and larger will be served at 480 Volts, 3 phase. Lighting will be primarily 277 Volts and small convenience loads as well as power receptacles will be 120 Volts. Power for industrial and medical equipment will be in accordance with manufacturer requirements.

Power monitoring will be provided at the main switchboard to allow for capturing the building energy data. In addition, power monitoring will be provided at major feeders to allow for capturing segregated data by load type (e.g. lighting, mechanical, etc.). Integration of this system with the building management system is anticipated.

Emergency and Standby Power

An emergency/standby generator is not anticipated for this project. Emergency lighting will be served by a central battery/inverter system in accordance with code requirements.

Wiring Methods

Feeders and branch circuits will utilize copper conductors with 600 Volt THWN/THHN insulation. Raceways will primarily consist of electrical metallic tubing with steel compression fittings.

Lighting and Lighting Controls Systems

The lighting system will address specific "visibility" requirements for the project and each individual space. "Visibility" includes issues such as light quality, occupant comfort and aesthetics as well as industry standards including the Illuminating Engineering Society (IES). Energy-efficient lighting sources such as LED and energy efficient fluorescent, will be utilized throughout. Lamp types will be specified in accordance with campus standards, while minimizing the number of different lamps.

Lighting controls will be provided to meet the programmatic requirements for each space while optimizing energy performance and meeting energy code and project sustainability goals. Occupancy sensors will be utilized for many spaces including classrooms, offices and restrooms. Supplemental time-of-day controls are anticipated for areas such as building common areas and exterior lighting. Automatic daylight harvesting controls will be provided.

Fire Alarm System

A new building fire alarm system will be provided and connected to the existing Simplex campus fire alarm system, monitored in Building 9000, via the campus fiber optic telecommunications backbone. The system will be an intelligent, software-controlled addressable fire alarm and detection system manufactured by Simplex, the campus standard manufacturer. Building fire alarm wiring will be installed within a designated raceway system.

Structured Cabling System

The structured cabling system for the Shoreline Community College Health Sciences and Music building will provide transport for voice, data, wireless and streaming video applications and will include telecommunications rooms and spaces, horizontal and backbone cabling infrastructure and pathways. The structured cabling system will be designed in accordance with TIA industry and Shoreline Community College standards.

The telecommunication rooms will be secure, dedicated and environmentally controlled spaces designed for the termination of horizontal and backbone cabling and telecommunication equipment and connections.

The structured cabling Infrastructure will be a hierarchical star topology using the most current standards for optical fiber backbone and twisted-pair copper horizontal cabling to provide capacity for high-bandwidth administrative and instructional applications. The building will include a wireless network to support mobile and handheld devices.

Horizontal cables will be installed from telecommunications outlets in classrooms and offices and other network device locations to a telecommunication room. The horizontal cabling will typically terminate on a modular connector mounted in a flush wall mounted face plate. The location and quantity of the telecommunications outlets for the building will be based on the programming requirements of the spaces and will include connections to support mechanical and electrical systems, and other automated building systems.

The structured cabling will be installed above the accessible ceilings in cable trays or J-hooks. Conduit pathways will be used in areas without accessible ceilings or where the spaces are open to structure.

Audio Visual Systems

Audio Visual (AV) systems will distribute audio and video signaling within classroom, conference room, and other spaces requiring AV capability. The AV systems will typically include AV input plate(s), speakers, audio amplifier, video switcher, control panel, mounting hardware, video projector or flat panel display, and wireless microphone system, and cabling.

AV systems in the Student Study spaces will include equipment and infrastructure for connecting student laptops, smartphones and other mobile devices to wall mounted LCD displays to facilitate ad hoc collaborative student activities.

The building will include an Active Learning Lab space that provides a flexible infrastructure capable of supporting a variety of interactive, collaborative, and project-based instructional models. The Active Learning Lab will include an instructor's workstation located in the center of the room surrounded by student lab tables. The instructor's workstation will contain all the AV equipment required to make large group presentations and control the AV equipment in the lab. Each of the student lab tables will include equipment to allow the student to work as a

team including connection for laptops and switching capability to allow the video content from each student device to be presented on the local display associated with their lab table. The system will have the flexibility to switch the video source for the displays and present the video content from any one of the workstations onto selected displays or onto all of the other displays simultaneously. The room will also be equipped with a large venue video projector providing larger images for group presentations, public speaking or other events.

Security Systems

The building will be equipped with electronic security systems including intrusion detection, access control, and video surveillance to protect the property and the occupants of the building. A Distributed Antenna System (DAS) will provide enhanced two-way radio coverage for emergency responders and a Rescue Assistance system will provide two-way communication at elevator lobbies for persons requiring assistance exiting the building in the event the elevators have been recalled.



MEMORANDUM (DRAFT)

DATE: October 6, 2017

FROM: Melanie Davies

RE: Landscape Design Narrative

Shoreline Community College – Health Sciences/Music/Arts

(HSMA) Project Request Report

MIG # 15062

Purpose

This memorandum is intended to provide a design narrative for the conceptual landscape and site components of the Shoreline Community College- Health Sciences/Music /Arts (HSMA) Project Request Report.

Project Background

The preferred siting for the proposed Allied Health, Science & Manufacturing Building places the new building at the north end of the campus replacing existing buildings 2200 and 2300.

Landscape Design Program Goals

The proposed conceptual site and landscape plans for the AHMS project are part of an on-going redevelopment and renovation of the college campus. The use of this campus by students, faculty and visitors occurs on a daily basis, morning through evening. Access by transit is located at the south entry to the site. Parking is provided on the west edges of the campus, and pedestrians and bicycles access primarily into the south entry from Greenwood Ave. N. Based upon the 2011 Long Range Development Plan, the site development of the HSAM project looks to enhance wayfinding and connections between existing and new buildings by connecting to the proposed north/south spine (proposed under the Allied Health Science and Manufacturing Building (AHMS)). The site and landscape plans are based upon the following design program goals.

- Preserve of existing trees to greatest extent possible
- Replace existing trees that need to be removed per City of Shoreline
 Tree Removal and Replacement requirements.
- Provide campus wayfinding, accessible campus circulation and gathering areas.
- Provide new plantings and irrigation.

Preservation of Existing Trees

The campus has many significant conifers and deciduous trees including large redwoods, cedars, Douglas firs and London plane trees. These trees are an important element of the character and scale of the campus. Some of these large trees are in close proximity to the existing and proposed buildings. Tree root and canopy preservation methods should be utilized during construction to save these trees including shoring, fencing and nutrient treatments as recommended by a certified arborist.

Replacement of Existing Trees

Existing trees will be removed with the proposed site and building improvements. Per the City of Shoreline tree removal and replacement code (SMC 20.50.360) significant conifers (over 8" diameter) and deciduous trees (over 12" diameter) will require replacement providing 1 tree each as well as 1 tree for each additional 3" of diameter up to 3 trees total. Until an arborist report is completed the approximate replacement quantity of trees is unknown. These replacement trees can be planted as part of the new building landscape and/or located in other areas of the campus.

Circulation and Gathering Areas

Accessible ramps, where they exceed a 5% slope, will require handrails on each side of the walkway.

Plantings and Irrigation

Plantings: Plantings of trees include a mix of shade and ornamental deciduous trees as well as conifers. Shrubs and groundcovers include a mix of native and ecologically adapted species (e.g. drought tolerant) to reduce irrigation requirements over the long term.

Bioretention Plantings: TBD

Mulch: All planting bed areas are be mulched with arborist wood chip mulch. Additional disturbed/demolished areas are to be provided with arborist wood mulch or cobble mulch

Irrigation: New plantings are to be irrigated with a new automatic system to allow for minimum 2-year plant establishment watering for trees and shrubs and permanent watering for lawn areas, as well as additional future watering as needed

Other Site Related Features

Other site related features such as lighting, security, walls, and rockeries are addressed in other parts of this report.

FACILITY CONDITIONS SURVEY - EXCERPTS

Building 800: Music

BUILDING CONDITION RATING

Music (070-8) STATE UFI: A05615 Main Campus (070A)

AREA: 23,822 SF BUILT: 1977 REMODELED: 1992 PREDOMINANT USE: Performing Arts

CONSTRUCTION TYPE: Heavy CRV/SF: \$337 REPLACEMENT VALUE: \$8,028,014



		Primary Syst	:en	ns		
COMPONENT:	Structure	RATING: 1 >	K	WEIGHT: 8	=	SCORE: 8
No signs of settl	lement or cracking, no abru	pt vertical chang	ges	Columns, be	arin	g walls and roof structure
appears sound/f	ree of defects					
COMMENTS:	Structural steel; wood roo	f trusses; steel f	rai	me for alumir	num	skylight
COMPONENT:	Exterior Closure	RATING: 1 x		WEIGHT: 8	=	SCORE: 8
Weatherproof,	tight, well-maintained exter	ior walls, doors,	W	indows/finish	es	
COMMENTS:	Brick and stucco					
COMPONENT:	Roofing	RATING: 1 >	X	WEIGHT: 10) =	SCORE: 10
Flashing and penetrations appear sound and membrane appears water- tight; drainage is positive and there						
are overflow scuppers						
COMMENTS:	Built-up roof w/aggregate	ballast; standing	g s	eam metal sl	ope	d roofs; aluminum skylight

		Secondary	Syst	tems		
COMPONENT:	Floor Finishes	RATING: 3	Х	WEIGHT: 6	=	SCORE: 18
Some wear and	minor imperfections are evi	dent; beginni	ing	deterioration		
COMMENTS:	Carpet; vinyl tile; sheet vin	yl; ceramic ti	le			
COMPONENT:	Wall Finishes	RATING: 1	Х	WEIGHT: 6	=	SCORE: 6
Maintainable su	ırfaces in good condition					
COMMENTS:	Gypsum board; ceramic tile	e; vinyl wall c	ove	ring		
COMPONENT:	Ceiling Finishes	RATING: 3	Х	WEIGHT: 6	=	SCORE: 18
Some wear and	tear; Minor staining or dete	rioration				
COMMENTS:	Direct-adhered and lay-in t	tile; vent woo	od; p	perforated pan	els	
COMPONENT:	Doors & Hardware	RATING: 3	Х	WEIGHT: 6	=	SCORE: 18
Functional but of	dated					
COMMENTS:	Interior wood doors-surfac	e wear w HN	/I fra	ames; exterior	wo	od doors/frames and HM
doors/frames						

		Service Syster	ms	
COMPONENT:	Elevators	RATING: 5 x	WEIGHT: 6 =	SCORE: 30
No elevator acce	ess for upper floors			
COMMENTS:	2 story			
COMPONENT:	Plumbing	RATING: 1 x	WEIGHT: 8 =	SCORE: 8
Fixtures and pip	ing appear to be in good cor	ndition; no evider	nce of leaks	
COMMENTS:	Galvanized, copper, cast ir	on and PVC pipin	g; porcelain fixture	25
COMPONENT:	HVAC	RATING: 3 x	WEIGHT: 8 =	SCORE: 24
System generall	System generally adequate; some deterioration; needs balancing; Offices areas have A/C; hazardous areas are			
ventilated				
COMMENTS:	AHUs; gas furnaces w DX c	ooling; packaged	variable refrigera	tion HVAC units
COMPONENT:	Electrical	RATING: 1 x	WEIGHT: 8 =	SCORE: 8
Adequate servic	e and distribution capacity f	or current/future	e needs	
COMMENTS:	600amp 480/277v			
COMPONENT:	Lights/Power	RATING: 3 x	WEIGHT: 8 =	SCORE: 24
Adequate work area illumination; adequate outlets for current use				
COMMENTS:	Ceiling-mount, lay-in, rece	ssed can and han	ging fluorescent li	ghting

Safety Systems COMPONENT: Life/Safety RATING: 3 x WEIGHT: 10 = SCORE: 30 Generally meets codes for vintage of construction **COMMENTS: COMPONENT:** Fire Safety RATING: 1 x WEIGHT: 10 = SCORE: 10 Locally monitored detection; alarm present; sprinklers in high hazard areas **COMMENTS:** COMPONENT: Modifications WEIGHT: 7 = RATING: 3 x SCORE: 21 Some modifications lack code compliance; HVAC service not fully considered during renovation **COMMENTS:** Some modifications not well executed; inadequate cooling

Quality Standards COMPONENT: Maintenance RATING: 31 x WEIGHT: 7 = SCORE: 217 No data **COMMENTS:** COMPONENT: Remaining Life RATING: 3 x WEIGHT: 6 = SCORE: 18 Life expectancy is 5-15 years; moderate system deterioration **COMMENTS:** Lower level of building completed in 1992 **COMPONENT:** WEIGHT: 6 = SCORE: 18 Appearance RATING: 3 x Average construction; average interior and exterior appearance **COMMENTS:**

COMPONENT: Insulation RATING: 3 x WEIGHT: 6 = SCORE: 18

Insulation present, but not to current standards (installed prior to 2010)

COMMENTS:

COMPONENT: Glazing RATING: 3 x WEIGHT: 6 = SCORE: 18

Double glazing with aluminum/metal window frames

COMMENTS:

TOTAL SCORE = 530 PREVIOUS BIENNIUM SCORE = 530

CONDITION: Replace or Renovate

Building 2200: Classroom

BUILDING CONDITION RATING

Regcla (070-22) STATE UFI: A07428 Main Campus (070A)

AREA: 6,270 SF BUILT: 1966 REMODELED: No PREDOMINANT USE: General Classroom CONSTRUCTION TYPE: Medium CRV/SF: \$301 REPLACEMENT VALUE: \$1,887,270



		Primary Syst	ems
COMPONENT:	Structure	RATING: 1	WEIGHT: 8.3 = SCORE: 8.3
No signs of settl	lement or cracking, no abrup	ot vertical chang	es Columns, bearing walls and roof structure
appears sound/f	ree of defects		
COMMENTS:	Concrete; structural brick;	glu-lam beams;	steel columns.
COMPONENT:	Exterior Closure	RATING: 3 x	WEIGHT: 8.3 = SCORE: 25
Sound and wear	therproof but with some det	erioration evide	nt
COMMENTS:	Brick; Hardi-board fascia; e	exposed wood b	eams; concrete asbestos tiles on mechanical
screens			
COMPONENT:	Roofing	RATING: 3	WEIGHT: 10.4 = SCORE: 31.3
Some deterioration is evident in membrane and flashings; maintenance or minor repair is needed			
COMMENTS:	Built-up roof w/gravel ball	ast	

		Secondary	Syst	ems		
COMPONENT:	Floor Finishes	RATING: 3	Х	WEIGHT: 6.3	=	SCORE: 18.8
Some wear and	minor imperfections are evi	dent; beginni	ing (deterioration		
COMMENTS:	Vinyl tile; carpet; carpet til	e				
COMPONENT:	Wall Finishes	RATING: 1	Х	WEIGHT: 6.3	=	SCORE: 6.3
Maintainable su	rfaces in good condition					
COMMENTS:	Gypsum board; 1x4 horizo	ntal cedar sid	ling	; brick		
COMPONENT:	Ceiling Finishes	RATING: 3	Х	WEIGHT: 6.3	=	SCORE: 18.8
Some wear and	tear; Minor staining or dete	rioration				
COMMENTS:	Direct-adhered tile; expos	ed glu-lam be	am	s; gypsum board	l	
COMPONENT:	Doors & Hardware	RATING: 3	Х	WEIGHT: 6.3	=	SCORE: 18.8
Functional but dated						
COMMENTS:	Interior wood doors w HM	frames-surfa	ice	wear; exterior w	000	doors/HM frames

		Service Syster	ns		
COMPONENT:	Elevators	RATING: 0 x	WEIGHT: 0 = SCORE: 0		
No data					
COMMENTS:					
COMPONENT:	Plumbing	RATING: 3 x	WEIGHT: 8.3 = SCORE: 25		
Fixtures are fund	ctional but dated; some leak	s; maintenance r	equired		
COMMENTS:	Copper and cast iron piping	g; no restrooms			
COMPONENT:	HVAC	RATING: 3 x	WEIGHT: 8.3 = SCORE: 25		
System generall	y adequate; some deteriorat	ion; needs balan	cing; Offices areas have A/C; hazardous areas are		
ventilated					
COMMENTS:	Rooftop heating and ventil	ating w dual-duc	t mixing boxes; no A/C		
COMPONENT:	Electrical	RATING: 3 x	WEIGHT: 8.3 = SCORE: 25		
Service capacity	meets current needs but in	adequate for futu	ire		
COMMENTS:	150 amp 208/120v; 100am	p 208/120v; fed	from transformer vault		
COMPONENT:	Lights/Power	RATING: 3 x	WEIGHT: 8.3 = SCORE: 25		
Adequate work	Adequate work area illumination; adequate outlets for current use				
COMMENTS:	Hanging and ceiling mount	fluorescent fixtu	res		

		Safety Syste	tems
COMPONENT:	Life/Safety	RATING: 5	x WEIGHT: 10.4 = SCORE: 52.1
Does not meet i	minimum health/safety req	uirements	
COMMENTS:	Does not meet minimum	health/safety sta	tandards; no illuminated exit signs or emergency
lights			
COMPONENT:	Fire Safety	RATING: 3	x WEIGHT: 10.4 = SCORE: 31.3
Extinguishers ar	nd signed egress; no violation	ons; no alarm or	r sprinklers
COMMENTS:			
COMPONENT:	Modifications	RATING: 1 x	x WEIGHT: 7.3 = SCORE: 7.3
Modifications a	ppear to be in compliance v	vith codes and so	sound construction practices; HVAC/electrical
service properly	provided		
COMMENTS:	Minor modifications to da	ite	

		Quality Standa	rds	
COMPONENT:	Maintenance	RATING: 1 x	WEIGHT: 7.3 =	SCORE: 7.3
Facility appears	well maintained			
COMMENTS:				
COMPONENT:	Remaining Life	RATING: 5 x	WEIGHT: 6.3 =	SCORE: 31.3
Life expectancy	is <5 years; significant	system deterioration		
COMMENTS:	Building either needs	s a major renovation of	interior w new roo	f and HVAC or should be
replaced				
COMPONENT:	Appearance	RATING: 5 x	WEIGHT: 6.3 =	SCORE: 31.3
Poor to average construction, but very unattractive exterior and interior spaces				
COMMENTS:				

		Heat L	oss		
COMPONENT:	Insulation	RATING: 3	Х	WEIGHT: 6.3 =	SCORE: 18.8
Insulation prese	nt, but not to current standa	ards (installed	<mark>l pri</mark>	or to 2010)	
COMMENTS:					
COMPONENT:	Glazing	RATING: 5	Х	WEIGHT: 6.3 =	SCORE: 31.3
Single glazing					
COMMENTS:					

TOTAL SCORE = 438 PREVIOUS BIENNIUM SCORE = 426

CONDITION: Needs Improvement/Renovation

Building 2300: Nursing

BUILDING CONDITION RATING

Nursed (070-23)

STATE UFI: A07524

Main Campus (070A)

AREA: 17,589 SF BUILT: 1971

REMODELED: 2004

PREDOMINANT USE: General Classroom

CONSTRUCTION TYPE: Medium CRV/SF: \$301 REPLACEMENT VALUE: \$5,294,289



	Pr	mary Syste	ems	
COMPONENT:	Structure RA	ING: 3 x	WEIGHT: 8 =	SCORE: 24
Some cracking of	<mark>evident</mark> but does not likely affect s	ructural ir	itegrity; Visible de	fects apparent but are non-
structural				
COMMENTS:	Concrete; structural brick; glu-la	m beams;	steel columns	
COMPONENT:	Exterior Closure RAT	NG: 3 x	WEIGHT: 8 =	SCORE: 24
Sound and wear	therproof but with some deterior	tion evide	nt	
COMMENTS:	Brick; aluminum fascia & soffits	exposed w	ood beams; asbe	stos tiles on mechanical screens
COMPONENT:	Roofing RA	ING: 3 x	WEIGHT: 10	= SCORE: 30
Some deteriora	Some deterioration is evident in membrane and flashings; maintenance or minor repair is needed			
COMMENTS:	Built-up roof w/ aggregate balla	it		

		Secondary	Syst	tems		
COMPONENT:	Floor Finishes	RATING: 3	Х	WEIGHT: 6	=	SCORE: 18
Some wear and	I minor imperfections are evid	dent; beginni	ing	deterioration		
COMMENTS:	Carpet; VAT; concrete; cera	ımic tile; she	et v	rinyl		
COMPONENT:	Wall Finishes	RATING: 3	Х	WEIGHT: 6	=	SCORE: 18
Aging surfaces b	but sound; some maintenance	e is required				
COMMENTS:	Gypsum board; brick; conci	rete; ceramio	c tile	e; wood strip; v	iny	l wall covering
COMPONENT:	Ceiling Finishes	RATING: 3	Х	WEIGHT: 6	=	SCORE: 18
Some wear and	l tear; Minor staining or deter	ioration				
COMMENTS:	Lay-in and direct-adhered t	ile; exposed	glu	-lam beams; ve	nt v	wood panels; gypsum board
COMPONENT:	Doors & Hardware	RATING: 3	Х	WEIGHT: 6	=	SCORE: 18
Functional but dated						
COMMENTS:	Interior and exterior wood	doors w HM	fra	mes-general su	rfa	ce wear

	Service Systems			
COMPONENT:	Elevators RATING: 5 x WEIGHT: 6 = SCORE: 30			
No elevator acc	ess for upper floors			
COMMENTS:	1 story (2-story in part; Nursing Skills Lab in basement; no elevator			
COMPONENT:	Plumbing RATING: 3 x WEIGHT: 8 = SCORE: 24			
Fixtures are fun	ctional but dated; some leaks; maintenance required			
COMMENTS:	Copper, galvanized, cast iron and steel piping; porcelain fixtures			
COMPONENT:	HVAC RATING: 3 x WEIGHT: 8 = SCORE: 24			
System generall	y adequate; some deterioration; needs balancing; Offices areas have A/C; hazardous areas are			
ventilated				
COMMENTS:	3 HW boilers; AHUs; no A/C			
COMPONENT:	Electrical RATING: 3 x WEIGHT: 8 = SCORE: 24			
Service capacity	meets current needs but inadequate for future			
COMMENTS:	300amp 480/277v			
COMPONENT:	Lights/Power RATING: 3 x WEIGHT: 8 = SCORE: 24			
Adequate work	Adequate work area illumination; adequate outlets for current use			
COMMENTS:	Lay-in, wall mount, recessed can and hanging strip fluorescent fixtures			

Safety Systems RATING: 3 x COMPONENT: Life/Safety WEIGHT: 10 = SCORE: 30 Generally meets codes for vintage of construction COMMENTS: COMPONENT: RATING: 3 x WEIGHT: 10 = SCORE: 30 Fire Safety Extinguishers and signed egress; no violations; no alarm or sprinklers **COMMENTS:** COMPONENT: RATING: 1 x WEIGHT: 7 = Modifications SCORE: 7 Modifications appear to be in compliance with codes and sound construction practices; HVAC/electrical service properly provided

Quality Standards COMPONENT: Maintenance RATING: 3 x WEIGHT: 7 SCORE: 21 Routine maintenance is required; deferred maintenance is evident; impact is minor to moderate **COMMENTS: COMPONENT:** Remaining Life RATING: 5 x WEIGHT: 6 = SCORE: 30 Life expectancy is <5 years; significant system deterioration Building either needs a major renovation of interior w new roof and HVAC or should be **COMMENTS:** replaced COMPONENT: RATING: 3 x **Appearance** WEIGHT: 6 = SCORE: 18 Average construction; average interior and exterior appearance **COMMENTS:** Exterior is very utilitarian

COMPONENT: Insulation RATING: 3 x WEIGHT: 6 = SCORE: 18

Insulation present, but not to current standards (installed prior to 2010)

COMMENTS:

COMPONENT: Glazing RATING: 5 x WEIGHT: 6 = SCORE: 30

Single glazing

COMMENTS:

TOTAL SCORE = 460 PREVIOUS BIENNIUM SCORE = 460

Basement remodel was well done

CONDITION: Needs Improvement/Renovation

COMMENTS:



STRATEGIC PLAN - EXCERPTS



Strategic Plan 2016-21

of the

Goal 1.

We attract students and community learners and ensure successful attainment of their goals through our programs, services, and teaching and learning environments.

Strategies

- A. Develop a robust method for ongoing student learning outcomes assessment at the College.
- B. Engage in comprehensive strategic enrollment management, encompassing the entire student experience, from the moment students aspire to attend college to the moment they attain their educational goals.
- C. Create physical spaces and employ technologies that enhance student learning.
- D. Cultivate intellectual and cultural vitality to invigorate and engage our College and communities.
- E. Clearly communicate to internal and external communities the educational experience that they can expect from Shoreline Community College.

Goal 2. We continually strive for disciplined excellence and focused improvement in all that we do.

Strategies

- A. Engage in an ongoing, data-informed cycle of academic program review that allows for agile changes in program offerings with a focused, creative mindset.
- B. Streamline all processes throughout the College with a focus on standardizing routine processes and innovating around processes that add value to the student experience.
- C. Invest in professional learning for faculty and staff to support continuous improvement and implementation of this strategic plan.
- D. Invest in high-impact teaching practices for student learning.
- E. Implement consistent, effective engagement and communications practices.
- F. Develop and support innovation that serves our students and communities.

Goal 3. We ensure that a climate of intentional inclusion permeates our decisions and practices, which demonstrate principles of ecological integrity, social equity, and economic viability.

Strategies

- A. Engage in ongoing, deliberate conversation and mindful discovery about our shared purpose and differences as we conduct our daily work.
- B. Develop and maintain a framework to ensure that ecological integrity guides our practices.
- C. Develop multicultural and global competencies to help us live the principles of social equity in an increasingly interdependent world.
- D. Pursue and obtain sufficient resources to fulfill the College's mission, and allocate those resources effectively in order to ensure economic viability in the implementation of this strategic plan.



FACILITIES MASTER PLAN - EXCERPTS

Shoreline Community College (SCC) opened its classrooms in January of 1964 in order to serve the needs of "non-traditional" students who could not afford to attend four-year institutions. SCC gave these students the opportunity to build skills that could advance their careers and earn them higher wages. SCC continues to be a valuable resource within its community. SCC provides a wide range of quality academic, professional, technical and professional/technical training programs to its students. The College also offers programs in continuing education and community involvement that address the lifelong learning needs of its community.

SCC's programs and attractive campus setting are among its primary assets. Current demand for SCC's top programs is strong. The College's programs in Allied Health and Sciences and Automotive Technology are known nationally for excellence. SCC's emerging programs in Energy Studies, Music Technology, and Multimedia are also widely recognized and address current market and educational trends. Recent national awards for SCC programs include the Bellwether Award, which SCC received for its innovative renewable energy training program. The College's Automotive Training programs have received awards at many levels, including the Governor's Award for Best Practices in professional/technical development for its General Service Technician training program. Its Toyota T-TEN program has repeatedly been ranked as one of the top five highest-performing programs in the country by Toyota Motor Sales USA, Inc.

The carefully landscaped and maintained campus grounds draw students to the school. The campus is located atop a densely-wooded bluff that is bounded on the north and west by Shoreview and Boeing Creek Parks. The campus's mature landscape with its specimen trees, Northwest native plantings and decorative gravel create a unique Pacific Rim landscape aesthetic. The complementary relationship between the natural setting and mature landscape creates a campus environment that students value.

SCC is the 12th largest community college in the state system of 34 colleges. The College has a student body that is more diverse than the local community. This diversity is an indication that the College draws its students from beyond its surrounding community. International students are drawn to the campus for its educational programs and setting. Retention of students is high at SCC. Approximately 70% remain at the College to complete their chosen programs of study.

SCC has recognized the need for change on its campus and initiated the master planning process in order to create a framework that will guide the future development of its campus in a way that reflects the mission and vision of the institution. The plan provides a broad vision for the campus and creates a path toward achieving SCC's institutional goals of building community, increasing accessibility and adopting sustainable practices. The City of Shoreline has determined that the College must create a master plan to establish and confirm current campus land use and to guide future growth. The City of Shoreline's Master Development Plan (MDP) must be submitted and approved before any major changes can be made to the campus. The State Board for Community and Technical Colleges (SBCTC) also requires that the College create a master plan before any additional capital funds are requested.

The College's quaint, one-story pagoda-style buildings are not configured to serve contemporary academic programs for either academic transfer or the professional/technical programs. These class-

rooms were designed to serve academic transfer programs. While academic transfer programs are still strong at the College, the inflexible lecture-only classrooms do not support contemporary pedagogy. Space for the hands-on learning that is characteristic of the professional technical programs is also significantly limited.

SCC has provided educational opportunities for a wide range of population groups for more than 40 years and prides itself on its excellent and award-winning programs and faculty. The physical planning of the campus is a key component of SCC's transition into the future. If the College is to continue to serve its community for the next 40 years, the College's physical plant must support its excellent programs and assist SCC in achieving its full potential as an institution of higher learning.

A. DEVELOPMENT PLAN

1. Long Range Development Plan (LRDP)

The master planning consultant team worked with SCC faculty and staff to create a set of goals that would guide the development of a long range campus master plan. These goals include:

- Replacing worn and obsolete buildings with new buildings that support SCC programs, particularly professional/technical programs such as Allied Health and the Sciences
- Improving the campus environment in terms of orientation and wayfinding, disabled access and security
- Encouraging interaction among all members of the SCC campus community by providing a variety of communal indoor and outdoor spaces
- Respecting the character of the existing campus by preserving trees and other significant landscape elements
- Implementing SCC's commitment to an environmentally sustainable campus
- Creating a long range vision for the campus that is fundable through the SBCTC capital funding process

The campus master plan will be addressed with two new planning documents that address two major phases. The overall plan is represented by the Shoreline Community College Long Range Development Plan (LRDP). The LRDP presents a 30-year, long range vision for the transformation of the SCC campus. It is intended to guide future development and serve as the basis for subsequent funding requests from the State. The first phase of the LRDP (for the next 15 years) is proposed to be submitted for approval to the City of Shoreline as a separate plan in order to meet the City's new code provisions requiring a Master Development Plan (MDP) for the College.

2. Facilities

SCC does not forecast that its campus population will grow significantly in the near future, but its existing facilities do require significant changes in order to continue to support SCC's educational programs. The LRDP recommends that the campus replace its existing single-story buildings with three-story, multi-use buildings in order to provide program space that is more efficient,

flexible and sustainable. The replacement projects will right-size existing program spaces by providing proper space for indoor circulation and gathering as well as contemporary mechanical, electrical, and plumbing systems.

The first phase of the LRDP that will be submitted for the MDP, the 15-Year Plan, represents the capital request plan that has been reviewed by the SCC Board of Trustees. Two new Allied Health and Sciences buildings were identified as the College's highest priority. The Auto Tech building will likely be expanded within the 15-year horizon, but the funding for this project will come from outside sources, not through the state capital funding process.

Projects proposed for the subsequent phases include the reconfiguration of the campus front door, including a new gateway student services building and improved visitor parking. Other projects that remain as SCC priorities include new buildings to accommodate professional/technical training and a new facility to house music and the arts programs, including drama, film, music technology, and visual communications technology as well as a new theater. The SCC Board will review and update the capital request plan prior to each biennial funding cycle.

3. Site & Infrastructure Development

The replacement of buildings will involve the systematic reorganization and upgrade of existing vehicular paths and parking areas. This reorganization will be phased along with phased construction of replacement of buildings. An improved entry sequence, a clearer, more direct circulation loop and long-term plans for parking that meet code requirements while maintaining parking capacity will provide needed circulation improvements. These improvements will also help the College achieve its goals for sustainability.

The LRDP addresses site issues such as the phased improvement of storm water quantity and quality on the SCC campus. Again, these improvements will be phased in conjunction with building construction. Existing accessibility problems will be addressed by providing universal access on steep slopes with a system of interior and exterior pathways that allows barrier free movement across the campus. The proposed new multi-story buildings will be planned as transit corridors to bridge difficult transitions in grade that occur across the campus. Elevators placed in strategically-located lobby spaces will help disabled campus users to negotiate the difficult elevation changes of the site.

New buildings will be sited to continue to allow the landscape to interact with and anchor the architecture. Distinctive materials, such as a native planting palette, erratic stones, and gravel will be retained to maintain the Pacific Rim character of the campus.

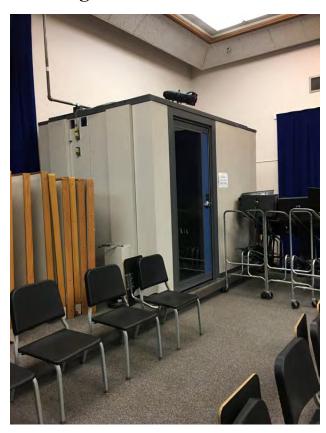
B. PROCESS

The current master planning process commenced in December of 2008. SCC leadership identified the most significant issues facing the College and worked with the planning team to devise a strategy for improving the campus by addressing the deficiencies of existing campus facilities and alleviating existing access and circulation problems. Early community input was also gathered. The first phase of the process resulted in this document, a Long Range Development Plan (LRDP) that will serve as a decision making tool for the College as it transitions into the future. Subsequently, the College will apply for a Master Development Plan (MDP) to meet the requirements of the City of Shoreline and provide the necessary land use entitlements for the LRDP to be realized.



PHOTOGRAPHS OF EXISTING CONDITIONS

Building 800



Pre-manufactured sound booths have been added to rehearsal spaces to accommodate need, creating awkward and inefficient use of space. Music staging and rehearsal equipment nust be stored in classrooms because original storage areas have been repurposed for instruction.



Traditional instrumental classes must now share space with music technology classes creating scheduling conflicts. Rooms have not been modified in a comprehensive manner to accommodate multiple-disciplines.



The main level is elevated and accessed by a pedestrian bridge connected to the hillside. The bridge lacks seismic resistance detailing and could cause the bridge to fail during an earthquake, creating and exiting and life safety issue. Water infiltration in the brick envelope is evidenced along wall flashings. The entire building envelope does not meet energy code.



Steel bracing at the lower level is not sufficient to withstand seismic loading during an earthquake.

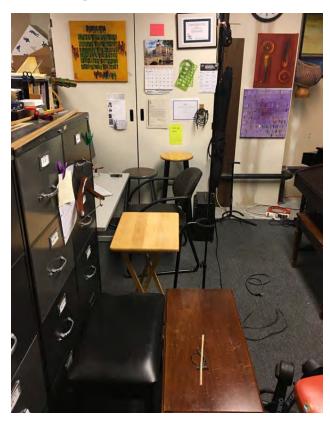


Exterior soffits are deteriorating due to weather impacts and water infiltration

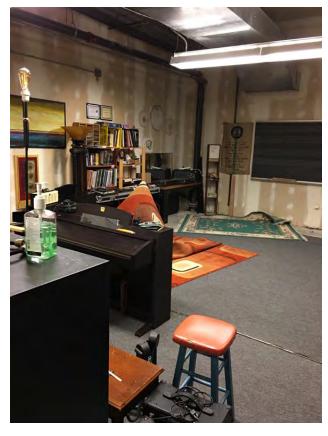


Exterior egress stair is in need of replacement.

Does not meet code.

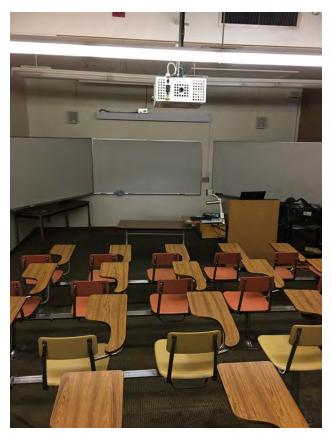


Former storage rooms on the lower level are being used for instruction, rehearsal and office space with limited architectural finishes and without any ventilation or daylight.

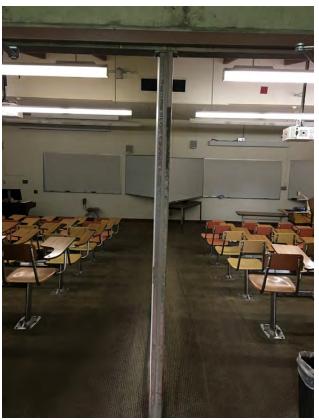




Slab on Grade at the lower level is sinking due to ground settlement.



Original tiered lecture style classroom has been divided into smaller tiered classrooms, each being compromised in function. Ventilation and indoor air quality is poor. Lecture style stepped seating is inflexible. A/V equipment and lighting does not serve modern pedagogy well.



Retrofitted partition wall that divides the tiered classrooms is only 2", the width of the original double door intermediate mullion. The wall does not provide adequate acoustical separation.





Retrofitted storage room now serves as the Nursing Basic Skills Lab. This space was not designed to hold the student count, amount of equipment and necessary supplies so it ends up being very compromised. A lot of time is spent rearranging the space to meet changing needs. Ventilation is inadequate. The lab can only be accessed down a flight of stairs and is not ADA compliant.

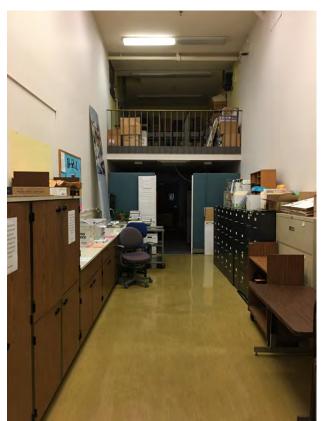


Patient areas are improvised with headwalls and services not accurately simulating real-world conditions. There are no simulation lab spaces to supplement the basic skills lab. There is no separate simulated medicine dispensory or medical supply rooms, leaving meuh equipment to materials out in the open.





Tiered lecture on the main level is inflexible for anything other than lecture and therefore is underutilized. Does not meet current nursing education needs.



Retrofitted Health Informatics/ Information Management/ Med Tech work and file room



BEST PRACTICES TO REDUCE GREENHOUSE GAS EMISSIONS

System / Best Practices	Included in Project?
Mechanical	
Solar water heating	No
Above code HVAC system efficiency	Yes
Use natural gas instead of electricity for heating	Yes
Geothermal heat pump	No
Post occupancy commissioning	Yes
Interconnectivity of room scheduling in 25Live and HVAC controls	Yes
Electrical	
Photovoltaic energy systems	No
Time of day and occupancy programming of lighting	Yes
Efficient lighting	Yes
Envelope	
Minimize building surface area for necessary floor area	Yes
Roofing materials with high solar reflectance and reliability	Yes
Green roofs to absorb heat and act as insulators for ceilings	No
Site	
Orient building for natural light and reduced heating and cooling loads	No
Trees and vegetation planted to directly shade building	Yes
Paving materials with high solar reflectance, enhanced water	
evaporation, or otherwise designed to remain cooler ore require less lighting than conventional pavements	Yes
Increase transportation choices – drive, walk, bike or public transit	Yes
Total number of these best practices included in project:	11

